

## Dance

## DNCE

Instruction offered by members of the Faculty of Fine Arts and the Faculty of Kinesiology.

Program Coordinator – A. Flynn

### Junior Courses

#### Dance 201 H(2-2)

##### *Introductory Contemporary Dance I*

Introductory study of the techniques of contemporary dance.

**Note:** Not open to Dance Majors

#### Dance 203 H(2-2)

##### *Dancing: Body, Mind, Culture*

An introduction to the study of dance in an academic setting.

**Note:** Open to Dance Majors only.

#### Dance 205 H(2S-2)

##### *Introductory Contemporary Dance II*

Further introductory study of the techniques of contemporary dance.

**Prerequisite:** Dance 201 or equivalent or consent of the Program of Dance.

**Note:** Not open to Dance majors.

#### Dance 207 H(2S-2)

##### *Contemporary Dance I*

Elementary study of the techniques of contemporary dance.

**Prerequisites:** Dance 205 or equivalent and consent of the Program of Dance.

#### Dance 209 H(2-2)

##### *Contemporary Dance II*

Further elementary study of the techniques of contemporary dance.

**Prerequisites:** Dance 207 or equivalent and consent of the Program of Dance.

#### Dance 211 H(2S-2)

##### *Jazz Dance I*

Introductory study of the techniques of jazz dance.

#### Dance 221 H(2S-2)

##### *Ballet I*

Introductory study of the techniques of ballet.

#### Dance 235 H(2S-2)

##### *Conditioning for Dancers*

Study of the basic principles of conditioning for dancers.

**Prerequisite:** Dance 203 or consent of the Program of Dance.

### Senior Courses

#### Dance 303 H(2S-4)

##### *Principles of Technique*

Reinforcement of the basic principles of contemporary dance in preparation for more advanced study.

**Prerequisites:** Dance 209 or equivalent and consent of the Program of Dance.

#### Dance 305 H(2S-4)

##### *Contemporary Dance III*

Elementary/intermediate study of the techniques of contemporary dance.

**Prerequisites:** Dance 209 or equivalent and consent of the Program of Dance.

#### Dance 307 H(2S-4)

##### *Contemporary Dance IV*

Further elementary/intermediate study of the techniques of contemporary dance.

**Prerequisites:** Dance 305 or equivalent and consent of the Program of Dance.

#### Dance 309 H(3S-0)

##### *Special Topics in Dance Theory*

**Prerequisite:** Consent of the Program of Dance.

##### **MAY BE REPEATED FOR CREDIT**

#### Dance 311 H(2S-4)

##### *Jazz Dance II*

Elementary study of the techniques of jazz dance.

**Prerequisites:** Dance 211 or equivalent and consent of the Program of Dance.

#### Dance 313 H(2S-4)

##### *Jazz Dance III*

Further elementary study of the techniques of jazz dance.

**Prerequisites:** Dance 311 or equivalent and consent of the Program of Dance.

#### Dance 321 H(2S-4)

##### *Ballet II*

Elementary study of the techniques of ballet.

**Prerequisites:** Dance 221 or equivalent and consent of the Program of Dance.

#### Dance 323 H(2S-4)

##### *Ballet III*

Further elementary study of the techniques of ballet.

**Prerequisites:** Dance 321 or equivalent and consent of the Program of Dance.

#### Dance 331 H(2S-2)

##### *Dance Improvisation*

Experiences in individual and group improvisation. Development of skills in designing and participating in improvisational structures.

**Prerequisites:** Dance 209 and Dance Education 247 or equivalent; or consent of the Program of Dance.

#### Dance 333 H(2S-2)

##### *Contemporary Choreography I*

Contemporary composition and choreography; the choreographic use of time, space, sound, movement and human communications.

**Prerequisite:** Dance 331 or equivalent or consent of the Program of Dance.

#### Dance 341 H(3S-0)

##### *Early Dance History*

Historical survey of dance: origins to the nineteenth century.

#### Dance 343 H(3S-0)

##### *Writing About Dance*

Aesthetic concepts and critical methods used in writing about dance.

**Prerequisites:** Dance 241 and 245 or consent of the Program of Dance.

#### Dance 345 H(3S-0)

##### *Modern Dance History*

Historical survey of twentieth century western theatre dance.

#### Dance 365 H(2S-4)

##### *Pilates Conditioning*

Study of the Pilates method of conditioning utilizing the Pilates Reformer apparatus.

**Prerequisites:** Dance 207 or equivalent and consent of the Program of Dance.

#### Dance 375 H(2-2)

##### *Body/Mind Practices*

The theory, vocabulary and application of body/mind practices.

**Prerequisite:** Kinesiology 261 or consent of the Program of Dance.

#### Dance 395 H(1S-5)

##### *Dance Performance Practicum I*

Practical experience in dance performance choreography, or artistic direction.

**Prerequisite:** Consent of the Program of Dance.

##### **NOT INCLUDED IN GPA**

#### Dance 397 H(1S-5)

##### *Dance Performance Practicum II*

Further practical experience in dance performance, choreography, or artistic direction.

**Prerequisite:** Consent of the Program of Dance.

**Prerequisite or Corequisite:** Dance 395.

##### **NOT INCLUDED IN GPA**

#### Dance 401 H(2S-2)

##### *Open Contemporary Dance I*

Study in the principles and techniques of contemporary dance, open to intermediate and advanced levels.

**Prerequisite:** Dance 307 or equivalent or consent of the Program of Dance.

#### Dance 403 H(2S-2)

##### *Open Contemporary Dance II*

Further study in the principles and techniques of contemporary dance, open to intermediate and advanced levels.

**Prerequisite:** Dance 401 or equivalent or consent of the Program of Dance.

**Dance 405** H(2S-4)

#### Contemporary Dance V

Intermediate study of the techniques of contemporary dance.

**Prerequisites:** Dance 307 or equivalent and consent of the Program of Dance.

**Dance 407** H(2S-4)

#### Contemporary Dance VI

Further intermediate study of the techniques of contemporary dance.

**Prerequisites:** Dance 405 or equivalent and consent of the Program of Dance.

**Dance 411** H(2S-4)

#### Jazz Dance IV

Intermediate study of the techniques of jazz dance.

**Prerequisites:** Dance 313 or equivalent and consent of the Program of Dance.

**Dance 413** H(2S-4)

#### Jazz Dance V

Further intermediate study of the techniques of jazz dance.

**Prerequisites:** Dance 411 or equivalent and consent of the Program of Dance.

**Dance 421** H(2S-4)

#### Ballet IV

Intermediate study of the techniques of ballet.

**Prerequisites:** Dance 323 or equivalent and consent of the Program of Dance.

**Dance 423** H(2S-4)

#### Ballet V

Further intermediate study of the techniques of ballet.

**Prerequisites:** Dance 421 or equivalent and consent of the Program of Dance.

**Dance 431** H(2S-2)

#### Contemporary Choreography II

Further study of contemporary composition and choreography.

**Prerequisites:** Dance 333 or equivalent and consent of the Program of Dance.

**Note:** Not open to students with credit in Dance 430.

**Dance 433** H(2S-2)

#### Contemporary Choreography III

Continued further study of contemporary composition and choreography.

**Prerequisites:** Dance 431 or equivalent and consent of the Program of Dance.

**Note:** Not open to students with credit in Dance 430.

**Dance 455** H(2S-4)

#### Contemporary Dance VI(a)

Continuing intermediate study of the techniques of contemporary dance.

**Prerequisites:** Dance 407 or equivalent and consent of the Program of Dance.

**Dance 457** H(2S-4)

#### Contemporary Dance VI(b)

Further continuing intermediate study of the techniques of contemporary dance.

**Prerequisites:** Dance 455 or equivalent and consent of the Program of Dance.

**Dance 463** H(2S-2)

#### Applied Movement Principles

The analysis of dance movement and training, incorporating appropriate studies in anatomy; dance injuries and their prevention, care and rehabilitation; posture correction and body conditioning for dance.

**Prerequisites:** Kinesiology 261 and two of Dance 205, 207, 211, 221 or equivalent.

**Dance 475** H(2-2)

#### Special Topics in Body/Mind Practices

A focus on one or more of the well-known Body/Mind practices such as Feldenkrais, Alexander, Yoga, Body/Mind Centering, Bartenieff Fundamentals, Laban Movement Analysis.

**Prerequisite:** Dance 375 or consent of the Program of Dance.

**MAY BE REPEATED FOR CREDIT**

**Dance 491** H(2S-2)

#### Design for Dance

Study of the design and production components of dance performance.

**Prerequisites:** Dance 333 or equivalent and consent of the Program of Dance.

**Dance 495** H(1S-5)

#### Dance Performance Practicum III

Advanced practical experience in dance performance, choreography, or artistic direction.

**Prerequisite:** Consent of the Program of Dance.

**Prerequisite or Corequisite:** Dance 397

**NOT INCLUDED IN GPA**

**Dance 499** H(2S-4)

#### Performance Techniques

A study of practical techniques in deepening performance integrity.

**Prerequisite:** Consent of the Program of Dance.

**MAY BE REPEATED FOR CREDIT**

**Dance 505** H(2S-4)

#### Contemporary Dance VII

Intermediate/advanced study of the techniques of contemporary dance.

**Prerequisites:** Dance 407 or equivalent and consent of the Program of Dance.

**MAY BE REPEATED FOR CREDIT**

**Dance 507** H(2S-4)

#### Contemporary Dance VIII

Further intermediate/advanced study of the techniques of contemporary dance.

**Prerequisites:** Dance 505 or equivalent and consent of the Program of Dance.

**MAY BE REPEATED FOR CREDIT**

**Dance 571** H(1S-6)

#### Directed Studies I

**Prerequisite:** Consent of the Program of Dance.

**MAY BE REPEATED FOR CREDIT**

**Dance 572** F(1S-6)

#### Directed Studies II

**Prerequisite:** Consent of the Program of Dance.

**MAY BE REPEATED FOR CREDIT**

**Dance 574** F(0-7)

#### Travel Study

An international perspective on dance training, performance and culture.

**Prerequisite:** Consent of the Program of Dance.

**MAY BE REPEATED FOR CREDIT**

**Dance 581** H(1S-6)

#### Special Topics in Dance I

**Prerequisite:** Consent of the Program of Dance.

**MAY BE REPEATED FOR CREDIT**

**Dance 591** H(1S-5)

#### Dance Production Practicum

Practical experiences in lighting, sound, costuming, promotion and production of dance performances.

**Prerequisites:** Dance 491 and consent of the Program of Dance.

**NOT INCLUDED IN GPA**

## Dance Education DCED

Instruction offered by members of the Faculties of Kinesiology and Fine Arts.

Students should also see course listings under the headings Dance Education Activity/Theory, Kinesiology, Outdoor Pursuits, Outdoor Pursuits Activity/Theory, Physical Education, and Physical Education Activity/Theory.

### Junior Courses

**Dance Education 225** H(1-3)  
(formerly Dance Education 221)

#### Aesthetic Movement Principles

An overview of aesthetic movement principles as they relate to dance in culture, education, recreation, and aesthetic sports.

**Note:** Open to Pedagogy Majors in Kinesiology and BA Dance Majors only.

**Dance Education 243** H(1-3)

#### Introduction to Dance

Experiential survey of contemporary dance forms such as modern, jazz, and social dance; and an overview of the role of dance in society.

**Dance Education 247** H (2-2)  
(formerly Dance Education 301)

**Creative Dance: A Study of Laban Analyses**

Creative dance through the study of movement themes as defined by Rudolf Laban.

**Dance Education 251** H(2-2)

**Introduction to Music for Dance**

An introduction to the relationship between music and dance.

**Senior Courses**

**Dance Education 303** H(2-2)

**Special Topics**

MAY BE REPEATED FOR CREDIT

**Dance Education 325** H(1-3)  
(formerly Dance Education 321)

**Dance in Schools**

Content, planning, and teaching methodology in school dance.

**Prerequisite:** Dance Education 221, 225, or 247.

**Note:** Open to Pedagogy Majors in Kinesiology and BA Dance Majors only.

**Dance Education 427** H(1-3)

**Social and Recreational Dance Forms**

Practical experience in a range of social and recreational dance forms.

**Dance Education 449** H(2-2)

**Dance Teaching Techniques**

Principles and practice of dance instruction.

**Prerequisites:** Kinesiology 261, Dance 307, 313 or 323, and 463, or consent of the Program of Dance.

**Dance Education 481** H(3-0)

**Dance and Culture**

The study of dance as a cultural practice.

**Prerequisite:** One of Dance Education 243, Dance 341 or 345.

**Dance Education 493** H(1-3)  
(formerly Dance Education 491)

**Dance Teaching Practicum**

Practical experience teaching dance in school and recreational settings.

**Prerequisite:** Consent of the Faculty.

NOT INCLUDED IN GPA

**Dance Education 503** H(3-0)

**Special Topics**

**Prerequisite:** Consent of the Faculty.

MAY BE REPEATED FOR CREDIT

**Graduate Course**

**Dance Education 603** H(3-0)

**Special Topics**

Selected topics in Dance Education and related subjects.

**Prerequisite:** Consent of the Faculty.

MAY BE REPEATED FOR CREDIT

**Dance Education Activity/Theory DEAT**

Instruction offered by members of the Faculty of Kinesiology.

Students should also see course listings under the headings Dance Education, Kinesiology, Outdoor Pursuits, Outdoor Pursuits Activity/Theory, Physical Education, and Physical Education Activity/Theory.

**Junior Courses**

**Dance Education Activity/Theory 279** E(0-2)

**Ballroom Dance I**

**Dance Education Activity/Theory 281** E(0-2)

**Folk Dance I**

**Dance Education Activity/Theory 287** E(0-2)

**Tap Dance I**

**Dance Education Activity/Theory 289** E(0-2)

**Renaissance Dance**

**Senior Course**

**Dance Education Activity/Theory 379** E(0-2)

**Ballroom Dance II**

**Prerequisite:** Dance Education Activity/Theory 279 or consent of the Faculty.

**Development Studies DEST**

Instruction offered under the direction of the Faculty of Communication and Culture. For information contact the Program Director or the Academic Programs Office, 220-6343.

Additional interdisciplinary courses are offered under the course headings African Studies, Canadian Studies, Central and East European Studies, Communications Studies, East Asian Studies, General Studies, Latin American Studies, Law and Society, Leisure, Tourism and Society, Museum and Heritage Studies, Northern Planning and Development Studies, Science, Technology and Society, South Asian Studies, and Women's Studies.

**Junior Course**

**Development Studies 201** H(2-1)  
(formerly Development Studies 391)

**Introduction to Northern and International Development**

An interdisciplinary course focusing on development in both a northern and international context. Explores factors that shape development processes; introduces concepts and issues such as poverty; colonialism and self-determination; human ecology and sustainable development; and appropriate technology. Examines the origins, purposes, and performance of contemporary national and international institutions and their effect on people in different geographical and socio-economic contexts.

**Senior Courses**

**Development Studies 375** H(3-0)

**Gender and Development**

Examines development from the critical perspective of the key role played by gender in development. Case studies from Canadian and international contexts will provide illustrative material for analyzing the issues that emanate from the gendered nature of development processes and practices.

**Development Studies 393** H(3-0)

**Theories and Applications of Development**

A study of development theories and applications through northern and international case studies. Examines practical manifestations of those theories and approaches in development planning, implementation, and praxis including Modernization theory; dependency theory; basic needs approach; neo-liberalism; the staple thesis; globalization; women in development; gender and development.

**Prerequisite:** Development Studies 201 or 391 or consent of the Associate Dean (Student Affairs and Curriculum).

**Development Studies 401** H(3-0)

**Special Topics in Development Studies**

An examination of selected topics in Development Studies. See Master Timetable for current topic(s).

MAY BE REPEATED FOR CREDIT

**Development Studies 485** H(3S-0)

**International and Intercultural Communication**

A seminar in cross-cultural communication at the personal, organizational, societal, and international levels. Discusses the concept of "Globalization" and its implications for communication among different cultures; analyses various theoretical perspectives underlying intercultural communication; explores issues of power, identity and influence; examines intercultural encounters in the context of specific diversified settings; and helps students develop intercultural communication competence.

**Prerequisite:** Third year standing.

**Development Studies 501** H(3-0)

**Research in Selected Topics**

Supervised individual study of a special topic.

**Prerequisites:** Consent of the Development Studies Director and the Associate Dean (Academic).

**Note:** Students should contact the Office of the Associate Dean (Academic) prior to the first day of classes to arrange an independent study course.

MAY BE REPEATED FOR CREDIT

**Development Studies 591** H(3S-0)

**Critical Perspectives on Development Practice and Research**

An interdisciplinary consideration of selected issues and methodologies in development, which will provide students with the critical perspective and skills needed to conceptualize, design, implement and effectively manage community development projects and programs.

**Prerequisites:** Development Studies 375 and 393.

Drama	DRAM
Instruction offered by members of the Department of Drama in the Faculty of Fine Arts. Department Head – D. McCullough	
Drama 001	(0-4)
<i>Theatrical Stage Production I</i>	
NOT INCLUDED IN GPA	
Drama 002	(0-4)
<i>Theatrical Stage Production II</i>	
NOT INCLUDED IN GPA	
Drama 003	(0-4)
<i>Theatrical Stage Production III</i>	
NOT INCLUDED IN GPA	
Drama 004	(0-4)
<i>Theatrical Stage Production IV</i>	
NOT INCLUDED IN GPA	
<b>Junior Courses</b>	
Drama 200	F(3S-2)
<i>Introduction to Acting</i>	
Practical experience in acting; improvisation and introductory work from texts; the development of communication skills and personal acting creativity.	
Drama 222	F(1-3)
<i>Introduction to Theatre Production</i>	
An introduction to design, technical and organizational principles of theatre production.	
<b>Note:</b> Participation on the production crews of Department productions is required.	
Drama 240	F(3-1T)
<i>Introduction to Drama</i>	
Interpretation and study of dramatic genres related to the Department's season of plays; introduction to play analysis.	
<b>Senior Courses</b>	
The following listing is provided to assist students in their selection of related groups of Drama courses.	
<b>Acting and Directing:</b>	
300	400 410 500 510
<b>Design and Technical:</b>	
313	315 317 319 321
325	329 409 411 415
417	419 423 425 429
517	519 531 533
<b>Dramatic Literature, Criticism, History, Theory:</b>	
340	342 344 356 440
452	540 552
<b>Theatre for Young Audiences and Developmental/Performance Drama:</b>	
360	362 364 460 462
560	

**Senior Option Courses:**

371	375	377	471	571
572				

**Production Courses:**

391	393	491	493	590
591	593			

**Graduate Courses:**

605	607	610	623	625
627	629	648	651	660
662				

**Drama 300** **F(2S-4)****Advanced Acting I**

Further development of fundamental acting techniques; participation in the Department's season of plays may be required.

**Prerequisites:** Drama 200 and consent of the Department.

**Drama 313** **H(2S-2)****Introduction to Design for Theatre I**

Basic set, props, lighting and costume design theory, process and technique for a variety of theatre forms and performance styles.

**Prerequisite or Corequisite:** Drama 319 or consent of the Department.

**Drama 315** **H(2S-2)****Introduction to Design for Theatre II**

Continuation of Drama 313.

**Prerequisite:** Drama 313 or consent of the Department.

**Drama 317** **H(2S-2)****Introduction to Stage Sound**

Basic principles of sound for the theatre: recording, reinforcement and reproduction techniques and methods used in creating a production design.

**Prerequisite:** Drama 222 or consent of the Department.

**Note:** This course meets for two hours per week during the Fall and Winter Sessions.

**Drama 319** **H(2S-2)****Graphics and Model Building for Theatre**

An introduction to graphic and model building techniques for the theatre designer.

**Prerequisite:** Drama 222 or consent of the Department.

**Drama 321** **H(2S-2)****Stage Management**

Principles of stage management; a stage management project related to one of the presentations in the Department's season of plays.

**Prerequisite:** Drama 222 or consent of the Department.

**Drama 325** **H(4-0)****History of Civil Dress and Decor I**

An overview of the history of civil dress and the allied arts of architecture and decor from prehistory to the Renaissance.

**Drama 329** **H(4-0)****History of Civil Dress and Décor II**

An overview of the history of civil dress and the allied arts of architecture and decor from the Renaissance to contemporary times.

**Prerequisite:** Drama 325 or consent of the Department.

**Drama 340** **F(4S-0)****Seminar in Drama I**

Critical examination of each play performed in the Department's season of plays centred upon their genres and historical settings; staging requirements for contemporary productions and other works by the same authors and their contemporaries may also be studied.

**Prerequisite:** Drama 240 or consent of the Department.

**Drama 342** **F(3-0)****History of the Theatre: Origins to the Late Eighteenth Century**

Theatre as an art and social phenomenon in selected cultures, emphasizing the development of Western traditions.

**Drama 344** **F(3-0)****History of the Theatre: The Late Eighteenth Century to the Present**

Popular and elite traditions of theatre in Western Europe and North America.

**Drama 356** **F(3S-0)****Canadian Theatre and Drama**

History, literature, and cultural milieu of Canadian theatre from its colonial origins to the present day.

**Drama 360** **F(2S-2)****Developmental Drama I**

Explorations in personal creativity; practical experience in creative drama activity; the principles, theories, and application of creative drama.

**Note:** Not open to students with credit in Drama 366.

**Drama 362** **F(2S-2)****Theatre for Young Audiences I**

History and objectives of theatre for the young audience; practical work in the principles and techniques of acting, directing and producing plays.

**Drama 364** **F(2S-2)****Performance Media**

Methods of adapting alternative spaces for performance, with emphasis on non-traditional modes of production, exploration and investigation of existing hardware and software to facilitate image and sound manipulation in the creation of performance environments.

**Prerequisite:** Consent of the Department.

**Drama 371** **H(2S-2)****Introduction to Playwriting**

Directed exercises in writing for the theatre; workshop sessions for developing and reworking

material.

**Prerequisites:** Drama 200, 222, and 240 or consent of the Department.

**Drama 375** **H(1.5-1.5)**

**Fundamentals of Puppetry**

History and development of puppetry; basic design, construction and manipulation of hand, rod and shadow puppets.

**Drama 377** **H(1.5-1.5)**

**Puppet Theatre Production**

Production of puppet shows; development of scripts, stage design, construction and performance.

**Prerequisite:** Drama 375 or consent of the Department.

**Drama 391** **H(0-6)**

**Performance Practicum I**

Practical experience in theatrical production.

**Prerequisites:** Drama 200, 222, and 240 or consent of the Department.

**Note:** Not open to students with credit in Drama 390.

**Drama 393** **H(0-6)**

**Performance Practicum II**

Further practical experience in theatrical production.

**Prerequisite:** Drama 391.

**Note:** Not open to students with credit in Drama 390.

**Drama 400** **F(3S-6)**

**Advanced Acting I**

Further study in the techniques of acting; performance in the Department's season of plays may be required.

**Prerequisites:** Drama 300 and consent of the Department.

**Drama 409** **H(1-4)**

**Scenic Painting**

Skills and techniques of advanced scenic art; development of working aesthetic principles in producing visual art for the stage; emphasis on process in the paint shops, and on the techniques and tools of realization within constraints of deadlines and available resources.

**Prerequisites:** Drama 313, 315 and 319 or consent of the Department.

**Drama 410** **F(2-2)**

**Fundamentals of Directing**

Theories and practical techniques of directing plays; students may be required to observe or assist faculty directors. Studies will be coordinated with the Department's season of plays whenever possible.

**Prerequisites:** Drama 200, 222, and 340 or consent of the Department.

**Drama 411** **H(1-4)**

**Advanced Scenic Painting**

Further development of skills and techniques of advanced scenic art; emphasis on the acquisition of advanced professional skills and disciplines.

**Prerequisite:** Drama 409 or consent of the Department.

**Drama 415** **H(2-2)**

**Advanced Lighting Design and Technique I**

Advanced studies in lighting design for the theatre. Studies in design and presentation for lighting various forms of contemporary theatre events and spaces.

**Prerequisite:** Drama 315 or consent of the Department.

**Note:** Not open to students with credit in Drama 426.

**Drama 417** **H(2-2)**

**Advanced Lighting Design and Technique II**

Continuation of Drama 415. Advanced studies in lighting design for the theatre.

**Prerequisite:** Drama 415 or consent of the Department.

**Note:** Not open to students with credit in Drama 426

**Drama 419** **H(2-2)**

**Advanced Scene Design and Technique I**

Set design and scenography for a variety of contemporary theatre forms and genres.

**Prerequisite:** Drama 315 or consent of the Department.

**Note:** Not open to students with credit in Drama 422.

**Drama 423** **H(2-2)**

**Advanced Scene Design and Technique II**

Continuation of Drama 419 with a heightened emphasis on the interpretation of text to design.

**Prerequisite:** Drama 419 or consent of the Department.

**Note:** Not open to students with credit in Drama 422.

**Drama 425** **H(2S-2)**

**Advanced Costume Design and Technique I**

Costume design and technique in relation to major styles of presentation.

**Prerequisites:** Drama 315, 319 and consent of the Department.

**Drama 429** **H(2S-2)**

**Advanced Costume Design and Technique II**

Continuation of Drama 425, costume design and technique in relation to major styles of presentation.

**Prerequisite:** Drama 425.

**Drama 440** **F(4S-0)**

**Seminar in Drama II**

Critical study of plays in the Department's season of plays suited to students in their third and fourth years; critical analysis and historical interpretation is integrated with a careful consideration of requirements for staging; plays generically or historically related may also be studied.

**Prerequisite:** Drama 340 or consent of the Department.

**Drama 460** **F(2S-2)**

**Developmental Drama II**

Theory and techniques of developing limited-resource productions and collective creations; other applications of dramatic techniques are investigated.

**Prerequisite:** Drama 360 or consent of the Department.

**Drama 462** **F(2S-2)**

**Theatre for Young Audiences II**

Problems of performance for young people through a study of comparative styles, research and practical projects; the rehearsal and production of scripted plays.

**Prerequisite:** Drama 362 or consent of the Department.

**Drama 471** **H(2S-2)**

**Playwriting**

Intermediate studies in writing for the theatre leading to the development of a one-act or full-length piece; workshop sessions for developing and rehearsing material.

**Prerequisites:** Drama 371 and consent of the Department.

**Drama 491** **H(0-6)**

**Performance Practicum III**

Further practical experience in theatrical production.

**Prerequisite:** Drama 393.

**Note:** Not open to students with credit in Drama 490.

**Drama 493** **H(0-6)**

**Performance Practicum IV**

Further practical experience in theatrical production.

**Prerequisite:** Drama 491.

**Note:** Not open to students with credit in Drama 490.

**Drama 500** **F(3S-6)**

**Advanced Acting III**

Interpretation of roles and special problems in performance; performance in the Department's season of plays may be required.

**Prerequisites:** Drama 400 and consent of the Department.

**Drama 510** **F(2S-3)**

**Advanced Directing**

Problems in play directing; the directing of scenes and a short play; the preparation of a promptbook; history of directing; participation as an assistant to the director in the Department's season of plays may be required.

**Prerequisites:** Drama 410 and consent of the Department.

**Drama 517** **H2S-2)**

**Advanced Design for Theatre I**

Advanced set, props, lighting, and costume design theory, process and technique for a variety of theatre forms and performance styles.

**Prerequisite:** Consent of the Department.

**Drama 519** **H(2S-2)**

**Advanced Design for Theatre II**

Continuation of Drama 517.

**Prerequisites:** Drama 517 and consent of the Department.

**Drama 531** H(2S-2)**Scene Painting I**

Theory and technique of scene painting for a variety of theatre genres.

**Prerequisite:** Consent of the Department.

**Drama 533** H(2S-2)**Scene Painting II**

Continuation of theory and technique of scene painting for a variety of theatre genres.

**Prerequisites:** Drama 531 and consent of the Department.

**Drama 540** F(4S-0)**Seminar in Drama III**

Critical study at an advanced level of the dramatic metaphor as presented in the Department's season of plays; intensive focus on the historical period and theatrical genre of one or two of the season's plays especially.

**Prerequisite:** Drama 440 or consent of the Department.

**Drama 560** F(2S-2)**Developmental Drama III**

Comparative studies of developmental drama; intermediate project work.

**Prerequisite:** Drama 460 or consent of the Department.

**Drama 571** H(2S-0)**Directed Studies I**

**Prerequisite:** Consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**Drama 572** F(2S-0)**Directed Studies II**

**Prerequisite:** Consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**Drama 590** F(1S-10)**Professional Theatre Internship**

Internship experience in acting; directing; design; dramaturgy; theatre, stage or production management with a local professional theatre organization.

**Prerequisites:** Fourth-year standing and consent of the Department.

**Drama 591** H(0-6)**Performance Practicum V**

Further practical experience in theatrical production.

**Prerequisite:** Drama 493.

**Drama 593** H(0-6)**Performance Practicum VI**

Further practical experience in theatrical production.

**Prerequisite:** Drama 591.

**Graduate Courses****Drama 605** H(2-0)**Methods in Theatre Research**

Methods in research in the four areas of specialization in the MFA Theatre program.

**Note:** Required of all students enrolled in the MFA Theatre program.

**Drama 607** H(2S-2)**Director, Designer, and Mise-en-scene**

Advanced collaborative methods and techniques for directors, designers and dramaturges, leading to the creation of a mise-en-scene for selected plays of varying styles and genres.

**Drama 610** F(2S-3)**Selected Problems in Directing****Drama 623** H(2S-2)**Seminar in Scene Design**

**MAY BE REPEATED FOR CREDIT**

**Drama 625** H(2S-2)**Seminar in Costume Design**

**MAY BE REPEATED FOR CREDIT**

**Drama 627** H(2S-2)**Seminar in Lighting Design**

**MAY BE REPEATED FOR CREDIT**

**Drama 629** H(2S-2)**Seminar in Technical Direction**

**MAY BE REPEATED FOR CREDIT**

**Drama 648** F(3S-0)**Seminar and Practicum: Contemporary Theatre, 1945 - Present****Drama 651** H(2S-0)**Directed Studies**

**MAY BE REPEATED FOR CREDIT**

**Drama 653** H(0-3)**Theatre at the Banff Centre**

Advanced drama studies. Although the Banff Centre does not provide credit course instruction, students with advanced experience in drama at the Banff Centre may apply for graduate-level credit from the University of Calgary.

**Prerequisite:** Consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**NOT INCLUDED IN GPA**

**Drama 660** F(2S-3)**Seminar and Practicum in Developmental Drama****Drama 662** F(2S-3)**Seminar and Practicum in Theatre for Young Audiences****Dutch****DTCH**

Instruction offered by members of the Department of Germanic, Slavic and East Asian Studies in the Faculty of Humanities.

Department Head – X-J. Yang

**Senior Course****Dutch 317** H(3-0)**Dutch Civilization**

Principal trends in the development of Dutch civilization and its place in the European setting.

**Note:** This course is given in English and no knowledge of Dutch is required.

**East Asia****ETAS**

A collaborative offering of the Faculties of Communication and Culture, Humanities, and Social Sciences.

**Senior Courses****East Asia 300** F(3-0)**Introduction to East Asia**

An examination of East Asian civilizations from ancient times to the modern period, including the socio-cultural forces that were shaped by and that contributed to the religious, historical, economic, literary, artistic, and political developments of this region. Attention will be given to such topics as how the East Asian civilizations came into being and the rise and development of various institutions that contributed to East Asia's distinctive cultural identities.

**East Asia 500** F(3-0)**Contemporary Issues in East Asia**

Contemporary social, philosophical, economic, political, and international issues within East Asia and analysis of the basis for contemporary interactions across the Pacific.

**Prerequisites:** East Asia 300, one full-course equivalent of the East Asia Major "Applied Methods" courses and at least one full-course equivalent in Japanese or Chinese language.

**East Asian Studies****EAST**

Instruction offered under the direction of the Faculty of Communication and Culture. For information contact the Program Co-ordinator or the Academic Programs Office, 220-6343.

Additional interdisciplinary courses are offered under the course headings African Studies, Canadian Studies, Central and East European Studies, Communications Studies, Development Studies, General Studies, Latin American Studies, Law and Society, Leisure, Tourism and Society, Museum and Heritage Studies, Northern Planning and Development Studies, Science, Technology and Society, South Asian Studies, and Women's Studies.

**Senior Courses****East Asian Studies 317** H(3-0)**Understanding East Asia**

Society, resources and environment; roots of ancient civilization; racial, ethnic and linguistic diversities; philosophic and religious traditions; arts and aesthetics; historical bases of tradition and modernity; role of education in social development; ideological differences and economic development.

Primary focus on China, Japan, Korea and Taiwan.

**Note:** Not open to students with credit in or concurrently registered in East Asia 300.

## East Asian Studies 319 H(3-0)

### East Asian Values in a Canadian Setting

Examines the presence of East Asian values within Canada, their potential for greater acceptance in and contribution to Canadian life, and changes that would facilitate the acceptance of East Asians into the Canadian mainstream. East Asian values will be examined generically, as well as specifically to the cultures of China, Japan, Korea and Vietnam.

**Note:** Not open to students with credit in General Studies 301.04.

**Note:** Previous course work in East Asian culture would be advantageous to the student.

## East Asian Studies 321 H(3-0)

### Introduction to the Calgary Chinese Community

Provides instruction on the direct experience of important aspects of the Calgary Chinese community, including its history, commercial sector, entertainment facilities, and its cultural, social, and religious organizations.

**Note:** Not open to students with credit in General Studies 301.06.

**Note:** Course requires off-campus attendance with a considerable amount of walking involved.

**Note:** Until August 15, preference in enrollment is given to Majors in East Asia.

## East Asian Studies 403 H(3-0)

### East Asian Perspectives on the Environment

Focuses on traditional East Asian attitudes to the environment. Investigates the philosophical foundations, concrete measures arising from, and positive consequences of these attitudes. Outlines environmental problems in western nations, including more modern developments in East Asia, as a demonstration of the difficulty and need of contributing to restoration and preservation of the environment. Concludes with an examination of how traditional East Asian attitudes could potentially benefit the environment today.

**Note:** Previous course work in East Asian culture would be advantageous to the student.

## Ecology

## ECOL

Instruction offered by members of the Department of Biological Sciences in the Faculty of Science.

Department Head – D.M. Reid

† Limited amounts of non-scheduled class time involvement will be required for these courses.

### Senior Courses

## Ecology 413 (140 hours)

### Field Course in Ecology

An examination of ecological principles and techniques through field exercises, including studies of terrestrial and aquatic populations, communities and ecosystems. The course is held at the Kananaskis Centre for Environmental Research in the two weeks immediately prior to the commencement of the Fall Session.

**Prerequisite:** Biology 313.

**Note:** Enrollment in this course may be limited. See

explanation in the Program section of this Calendar.

## Ecology 417 H(3-3)

### Aquatic Communities and Ecosystems

Community composition and dynamics at the various trophic levels of aquatic ecosystems. Temporal and spatial changes in community composition, physical and chemical conditions, and their effects on the ecosystem. There will be a full week-end field trip.

**Prerequisites:** Biology 313 and 315 or consent of the Department.

**Note:** Enrollment in this course may be limited. See explanation in the Program section of this Calendar.

## Ecology 419 H(3-3)

### Terrestrial Communities and Ecosystems

Processes and patterns in above- and below-ground terrestrial communities. Ecosystem level processes in fluxes of carbon and nutrients. Methods for assessing biomass, productivity and biochemical pathways.

**Prerequisites:** Biology 313 and 315 or consent of the Department.

**Note:** Enrollment in this course may be limited. See explanation in the Program section of this Calendar.

## Ecology 425 H(3-3)

### Quantitative Biology II

Quantitative analysis as applicable to ecological research. Methodologies and models will be presented and analyzed. Particular emphasis will be placed on experimental design, regression analysis, and the study of spatial dispersion.

**Prerequisites:** Biology 313 and 315.

**Note:** Enrollment in this course may be limited. See explanation in the Program section of this Calendar.

## Ecology 429 H(3-3)

### Ecology of Individuals

Ecological and evolutionary perspectives on physiology and behaviour. This course focuses on the influences on resource acquisition, maintenance, growth, and reproduction and their implications for survival and fertility.

**Prerequisite:** Biology 313.

**Prerequisite or Corequisite:** Ecology 425.

**Note:** Enrollment in this course may be limited. See explanation in the Program section of this Calendar.

## Ecology 439 H(3-3)

### Ecology of Populations

A conceptual and practical treatment of population ecology including: population growth, demography, life histories, population dynamics, competition, predation and mutualism.

**Prerequisite:** Ecology 429.

**Note:** Enrollment in this course may be limited. See explanation in the Program section of this Calendar.

## Ecology 491 H(3-3)

### Ecological Entomology

Insect diversity. Terrestrial and aquatic adaptations. Chemical ecology and insect relationships with plants. Behavioural ecology with emphasis on social

insects. Insect populations and their natural and artificial control.

**Prerequisites:** Biology 233 and 313.

**Note:** Offered in odd-even dated academic years.

## Ecology 501 H(0-3)

### Ecological and Evolutionary Applications

A class project course in which students apply their understanding of ecological and evolutionary concepts and their analytical skills to investigate selected problems in detail. Project topics vary from year to year and will include fundamental and applied problems. Formal written and oral reports will be presented as a necessary component of the course.

**Prerequisite:** Ecology 417.

**Prerequisites or Corequisites:** Biology 401, Ecology 419 and 439.

**Note:** Ecology 501 should be taken in the final year of the program.

## Ecology 507 H(3-3)

### Special Problems in Ecology

Lectures, seminars, term papers and training in theoretical and/or laboratory methods. After consultation with a Departmental faculty member who will supervise the chosen problem, a permission form obtained from the Department Office must be signed by the course supervisor before a student can register.

**Prerequisites:** Third or higher-year standing and consent of the Department.

### MAY BE REPEATED FOR CREDIT

## Ecology 527 H(3-2T)

### Ecology of Fishes

The ecology of fishes with an emphasis on freshwater systems. Fish will be used as models for examining ecological principles and theory at various levels of organization including physiological, behavioural, population and community ecology. Topics covered include: morphology, systematics, foraging, bioenergetics, life history strategies, population dynamics and the role of fish in aquatic food webs.

**Prerequisites:** Biology 313, and one of Ecology 417 or Zoology 477.02.

**Note:** Offered in even-odd dated academic years.

## Ecology 528 F(0-6)

### Independent Studies in Ecology

Original and independent thought, practical research and the completion of written and oral reports. After consultation with a Departmental faculty member who will supervise the chosen problem, a permission form obtained from the Department Office must be signed by the course supervisor before a student can register.

**Prerequisites:** Fourth-year standing and consent of the Department.

### MAY BE REPEATED FOR CREDIT

## Ecology 530 F(0-8)

### Honours Research Project in Ecology

Research project under the direction of one or more faculty members in the Department of Biological

Sciences. Formal written and oral reports must be presented on completion of this course. Open only to Honours Ecology students or Honours Biological Sciences students. After consultation with a Department faculty member who will supervise the chosen problem, a permission form obtained from the Department Office must be completed before a student can register.

**Prerequisites:** Fourth-year standing and consent of the Department.

### Graduate Courses

Enrollment in any Graduate Course requires consent of the Department.

Only where appropriate to a student's program may graduate credit be received for courses numbered 500-599. 600-level courses are available with permission to undergraduate students in the final year of their programs.

#### Ecology 603 H(3-0)

##### *Advanced Behavioural Ecology*

Current problems and recent research in areas of particular significance. Topics will vary from year to year.

**Note:** Offered in even-odd dated academic years.

**MAY BE REPEATED FOR CREDIT**

#### Ecology 607 H(0-6)

##### *Limnology and Oceanography*

Lectures, seminars and projects in the areas of limnology, aquatic ecology and oceanography.

#### Ecology 677 H(0-6)

##### *Advanced Population Ecology*

The theory and practice of the study of populations, methods of population estimation, factors affecting populations, and systems approaches to the modelling of populations.

#### Ecology 731 H(3-0)

##### *Advanced Plant Ecology*

Current problems and recent research in areas of particular significance. Topics will vary from year to year.

**MAY BE REPEATED FOR CREDIT**

## Economics

## ECON

Instruction offered by members of the Department of Economics in the Faculty of Social Sciences.

Department Head – E.A. Wilman

### Junior Courses

#### Economics 201 H(3-1T)

##### *Principles of Microeconomics*

Principles of consumption, production, exchange: market and firm equilibrium under different competitive conditions. These principles are applied to various contemporary problems in the Canadian economy, such as the changing structure of agriculture, foreign ownership and control, and pollution.

#### Economics 203 H(3-1T)

##### *Principles of Macroeconomics*

National income determination, the monetary and

banking system, and elementary fiscal and monetary policies. Contemporary problems of unemployment, inflation, economic growth, business cycles and the international economy.

**Prerequisite or Corequisite:** Economics 201 or consent of the Department.

#### Economics 209 H(3-1T)

##### *(Engineering 209)*

##### *Engineering Economics*

The basic tools and methodology of engineering economic studies. Topics include investment decisions, theory of replacement, economies of scale, externalities, social decision making and government regulation. Examples are drawn from engineering projects.

**Prerequisite:** Registration in the Faculty of Engineering with second year standing or higher. If not registered in the Faculty of Engineering, consent of the Department of Economics.

### Senior Courses

#### Economics 301 H(3-0)

##### *Intermediate Economic Theory - Microeconomics I*

Demand, production and costs in a market economy. Pricing in perfectly and imperfectly competitive markets.

**Prerequisites:** Economics 201/203 or consent of the Department.

#### Economics 303 H(3-0)

##### *Intermediate Economic Theory - Macroeconomics I*

Introduction to the analysis of macroeconomic issues including the causes of recessions and unemployment, the determination of exchange rates, and the effects of government policies.

**Prerequisites:** Economics 201/203 or consent of the Department.

#### Economics 305 H(3-1T)

##### *Computational Optimization and Economic Applications I*

The use of linear optimization methods to structure and solve numerical resource allocation problems. Topics include model formulation, solution techniques, microcomputing software and duality. Numerous practical applications to economic, management and energy problems, including cost-benefit analysis.

**Prerequisite:** Economics 201 or consent of the Department.

#### Economics 307 H(3-1T)

##### *Computational Optimization and Economic Applications II*

Extensions of methods and models of linear optimization, including nonlinear optimization, with applications to economic, management, and energy problems.

**Prerequisite:** Economics 305 or consent of the Department.

#### Economics 309 H(3-0)

##### *Microeconomics for Economics and Society*

Microeconomic concepts, including consumer behaviour, firm behaviour, competitive markets, factor markets, general equilibrium, market failure,

welfare economics, and social choice with an emphasis on public policy applications.

**Prerequisite:** Economics 201 or consent of the Department.

**Note:** Credit for both Economics 309 and either 357 or 529 will not be allowed.

**Note:** Designed for students majoring in Economics and Society and for students not majoring in Economics.

#### Economics 311 H(3-1)

##### *Computer Applications in Economics*

Use of spreadsheets for economics applications, including project evaluation with financial-economic functions, oil and gas prospect evaluation, investment portfolio management with database functions, database retrieval, and various topics in micro- and macro-economics.

**Prerequisites:** Economics 201/203 or consent of the Department.

#### Economics 313 H(3-0)

##### *Macroeconomics for Economics and Society*

Analyzes the behaviour of macroeconomic variables such as Gross Domestic Product, interest rates, inflation, unemployment, balance of payments and the foreign exchange rate. Emphasis will be on monetary and fiscal policy applications.

**Prerequisites:** Economics 201 and 203 or consent of the Department.

**Note:** Credit for both Economics 313 and either 359 or 531 will not be allowed.

**Note:** Designed for students majoring in Economics and Society and for students not majoring in Economics.

#### Economics 315 H(3-0)

##### *Introduction to Econometrics I*

Introduction to techniques used in quantifying economic relationships. Topics include estimation and testing of hypotheses, forecasting and construction of prediction intervals, use of appropriate functional forms, detection and correction of measurement problems, and use of programs emphasizing single equation regression analysis.

**Prerequisites:** Economics 201/203 and Statistics 213, or consent of the Department.

**Note:** Credit for both Economics 315 and 523 will not be allowed.

#### Economics 321 H(3-0)

##### *The Global Trading System*

Introduction to the theory of international trade; provides a basis for examining Canadian trade policy, and regional and world trade institutions such as the WTO and NAFTA. Topics include: tariffs, non-tariff barriers and enhancements, countervail and anti-dumping action, multinational enterprises and international joint ventures.

**Prerequisites:** Economics 201/203 or consent of the Department.

#### Economics 323 H(3-0)

##### *Natural Gas Markets*

Operation of the natural gas industry in North America. Economics of exploration, development, production, marketing and transportation of natural gas. Impact of government regulations and



deregulation.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 325 H(3-0)

### *Petroleum in the North American Economy*

The operation of the crude petroleum industry in North America, with particular reference to the exploration decision, market structure, and particular policy questions such as conservation, special taxation provisions, and regional income effects.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 327 H(3-0)

### *Petroleum in the World Economy*

The structure of the world petroleum industry, with particular reference to industry pricing policies, producer company - producer country bargaining, and consuming - country energy policies, including North American import policies.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 337 H(3-0)

### *Development Economics*

An introduction to developing economies: the meaning, significance and purpose of economic development, major theories of economic development, economic problems of developing countries.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 339 H(3-0)

### *Canadian Economic Development*

The growth and development of the Canadian economy in relation to the endowment of natural resources, changing market conditions and technology, and Canadian public policy.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 341 H(3-0)

### *Money and Banking*

Operation of financial markets and institutions: the principles of money creation, interest rate determination, and central banking.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 345 H(3-0)

### *Economic Analysis of Law*

An introduction to the relationship between law and economics. Economic theory will be used to analyse property and tort law.

**Prerequisite:** Economics 201 or consent of the Department.

## Economics 349 H(3-0)

### *The Economics of Social Problems*

Contribution that economic analysis can make to the understanding of selected current social issues such as poverty, aging, crime, drug abuse and discrimination.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 355 H(3-0)

### *Canadian Public Finance*

Examination of the institutions behind and economic rationale for Canadian government policy relating to public expenditures and taxation. Topics include the history and present structure of government spending and taxation, tax expenditures, the budgetary process, inter-jurisdictional issues, and program design.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 357 H(3-0)

### *Intermediate Economic Theory - Microeconomics II*

Extensions of microeconomic topics such as factor markets, general equilibrium, and welfare economics.

**Prerequisite:** Economics 301 and Mathematics 249 or 251; or consent of the Department.

**Note:** Credit for both Economics 357 and either 309 or 529 will not be allowed.

## Economics 359 H(3-0)

### *Intermediate Economic Theory - Macroeconomics II*

Extensions of macroeconomic topics such as theories of aggregate consumption and investment, interest rate theory, the demand for money, expectations in macro models and growth theory.

**Prerequisite:** Economics 303 and Mathematics 249 or 251; or consent of the Department.

**Note:** Credit for both Economics 359 and either 313 or 531 will not be allowed.

## Economics 365 H(3-0)

### *Regional Economics*

The nature of economic regions. Choosing regions for development, regional income estimation and social accounting, inter-regional flow analysis, location theory, theory of regional growth and planning.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 367 H(3-0)

### *Agricultural Economics*

Introduction to the major economic forces affecting the agri-food sector, including technological change, price variability, environmental sustainability and international competition. Issues include government support mechanisms, international trade restrictions, industrialization of agriculture, economics of food safety and security, sustainable resource use and environmental conflict.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 371 H(3-0)

### *Economic Analysis of Transportation*

Modal choice by passengers, location choice by firms, capital investment choice. Cost, demand, and market structure related to the determination of transportation rates. Cost/Benefit analysis of transportation projects. Analysis will be related to contemporary aspects of ocean shipping, air, rail, trucking, pipelines and urban transportation.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 373 H(3-0)

### *Game Theory and Strategic Thinking for the Social Sciences*

An introduction to the principles of game theory utilizing a non-mathematical and intuitive approach. The principles of strategic thinking are illustrated by application and examples in economics and other social sciences. The course objective is to develop the ability of students to reason strategically and to understand how game theory can be used to explain social interaction.

## Economics 377 H(3-0)

### *Economics of the Environment*

An examination of the factors that inhibit an efficient allocation of the environment in a market economy. The types of economic policies that can be initiated to prevent environmental decay are studied. Economic theory and policy are applied to a variety of environmental problems, such as air and water pollution, solid waste disposal, and conservation.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 379 H(3-0)

### *The Economics of Health*

Theories and evidence regarding demand for health and health care, consumer and physician behaviour, asymmetric information in health care markets, and economic evaluation of health care programs.

**Prerequisites:** Economics 201/203 or consent of the Department.

## Economics 387 H(3-0)

### *Introduction to Mathematical Economics I*

Essential mathematical background for studying Economics: basic techniques of linear algebra and calculus, including unconstrained and constrained optimization, and their applications to resource allocation problems.

**Prerequisites:** Economics 201/203; and Mathematics 211; and Mathematics 249 or 251 or 253; or consent of the Department.

**Prerequisites or Corequisites:** Economics 301/303 or consent of the Department.

**Note:** Credit for both Economics 387 and either 304 or 521 will not be allowed.

## Economics 389 H(3-0)

### *Introduction to Mathematical Economics II*

Further essential mathematical background for studying Economics, including exponential and logarithmic functions, eigenvalues and eigenvectors, quadratic forms, integration, and basic methods of dynamic analysis, and their applications to resource allocation problems.

**Prerequisite:** Economics 387 or consent of the Department.

**Note:** Credit for both Economics 389 and 304 will not be allowed.

## Economics 397 H(3-0)

### *Intermediate Economic Theory: Business Applications*

Provides students with the opportunity to extend and apply key concepts introduced in Economics 301 and 357. The objective is to provide students with the opportunity to develop expertise in the application and utilization of theory, as well as gain a

greater appreciation for the strengths and limitations of microeconomic analysis.

**Prerequisite:** Economics 357.

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**Economics 399** **H(3-0)**

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**Selected Topics in Economics I**

A decimalized course in which topics will vary from year to year. Consult the timetable or the Department for the topics available in a given year.

**Prerequisites:** Economics 201/203 or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

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**Economics 401** **H(3-0)**

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**Public Sector Economics: Expenditures**

Theory of government spending. Topics include the nature of public goods and externalities, the pricing of public services, causes of growth of public expenditures, expenditure incidence, social insurance, social decision procedures, and political and bureaucratic influences.

**Prerequisites:** Economics 303 and 357; or consent of the Department.

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**Economics 403** **H(3-0)**

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**Public Sector Economics: Taxation**

Theory of taxation. Topics include the rationale for and the incentive effects of taxation, efficiency and equity aspects of taxation, partial and general equilibrium tax incidence, open economy effects, choice of governing instruments, and tax reform.

**Prerequisites:** Economics 303 and 357; or consent of the Department.

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**Economics 405** **H(3-0)**

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**Political Economy of Public Policy**

Introduction to the economic foundations of political economy and economic models of public sector policy formation. Potential topics are the role of institutions in policy design, theories of bureaucracy, political business cycles, the formation and behaviour of interest groups, and the strategic use of government debt.

**Prerequisites:** Economics 303 and 357; or consent of the Department.

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**Economics 415** **H(3-0)**

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**Seminar in Contemporary Policy Issues I**

An examination of selected problems and policies, with special emphasis on microeconomic issues.

**Prerequisites:** Economics 303 and 315; or consent of the Department.

**Prerequisite or Corequisite:** Economics 357.

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**Economics 417** **H(3-0)**

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**Seminar in Contemporary Policy Issues II**

An examination of selected problems and policies, with special emphasis on macroeconomic issues.

**Prerequisites:** Economics 301 and 315; or consent of the Department.

**Prerequisite or Corequisite:** Economics 359.

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**Economics 419** **H(3-0)**  
(formerly Economics 317)

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**Introduction to Econometrics II**

Econometric techniques emphasizing estimation of

sets of interdependent economic relationships. Topics include construction of economic models, simultaneous equation problems, alternate estimation procedures, simulation models, econometric theory in matrix form, use of computer packages and solution of practical econometric problems.

**Prerequisites:** Economics 315; Mathematics 211; Economics 301 and 303 or consent of the Department.

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**Economics 423** **H(3-0)**

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**International Macroeconomics**

Foreign exchange markets, and international macroeconomic connections with trade in assets as well as goods and services. Topics include: alternative exchange rate regimes; monetary and fiscal policy responses to problems of unemployment and inflation; balance of payments adjustment mechanisms; international debt; and Euro-dollar markets.

**Prerequisite:** Economics 303 or 313 or consent of the Department.

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**Economics 425** **H(3-0)**

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**International Trade**

The general equilibrium treatment of the gains from trade, comparative advantage and trade patterns provides a basis for examining topics such as: trade policy under imperfect competition, trade policy and the environment, trade policy and economic growth, and preferential trading arrangements.

**Prerequisite:** Economics 309 or 357 or consent of the Department, or **Corequisite:** Economics 357. Completion of Economics 321 is recommended but not necessary.

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**Economics 431** **H(3-0)**

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**The Canadian Labour Market**

Economic analysis of migration, labour force participation, education, fertility, manpower policy, and the measurement and treatment of unemployment.

**Prerequisites:** Economics 301 or 309; and 303 or 313; or consent of the Department.

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**Economics 433** **H(3-0)**

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**Wage Determination**

Wage and income determination; policies dealing with employment discrimination; and income redistribution.

**Prerequisite:** Economics 301 or 309 or consent of the Department.

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**Economics 443** **H(3-0)**

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**The Economics of Financial Markets**

An introduction to the basic functions and structure of financial markets, and an analysis of the economic aspects of pricing decisions in securities markets. Institutional features, theoretical pricing and trading strategies in bond, stock, options, forward and futures markets will be examined.

**Prerequisites:** Economics 341 and 357; or consent of the Department.

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**Economics 453** **H(3-0)**

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**Cost-Benefit Analysis**

Theoretical basis for social cost-benefit analysis, appraisal techniques for investment projects and public policies, and selected applications.

**Prerequisite:** Economics 357 or consent of the Department.

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**Economics 465** **H(3-0)**

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**Industrial Development of Alberta**

Structure, growth and development of the provincial economy; evaluation of industrial projects and policy alternatives.

**Prerequisites:** Economics 301 or 309; and 303 or 313; or consent of the Department.

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**Economics 471** **H(3-0)**

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**Industrial Organization**

Behaviour of firms in imperfectly competitive markets. Topics include the theory of strategic competition; dynamic price competition and tacit collusion; product differentiation, product selection, and preemption; entry deterrence and capacity competition; information, reputation, and predation; the economics of research and development; international trade and imperfectly competitive markets.

**Prerequisite:** Economics 357 or consent of the Department.

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**Economics 475** **H(3-0)**

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**Economics of Natural Resources I**

Application of economic theory to the problems of natural resource pricing, allocation and conservation. Rent theory, location theory, intertemporal maximization. Natural resource policy formulation. Contemporary Canadian resource problems.

**Prerequisite:** Economics 357 or consent of the Department.

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**Economics 477** **H(3-0)**

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**Regulatory Economics**

An introduction to economic regulation, its rationale, form and effects with a focus on the economic theory of regulation and on the practice, structure, and evolution of Canadian regulatory institutions.

**Prerequisite:** Economics 301 or 309, or consent of the Department.

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**Economics 479** **H(3-1)**

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**Experimental Economics**

Introduces students to the use of and insights gained from experiments in economic research. Develops many of the concepts from Economics 301/357, shedding new light on the assumptions of rationality, the design of markets, and the implementation of market institutions. Covers not only experimental methods, but also reviews some of the most important papers in the field. As part of the course, students will be participating in a variety of in-class experiments.

**Prerequisites:** Economics 315 and 357.

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**Economics 481** **H(3-0)**

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**Behavioural Economics**

Major factors underlying economic behaviour including: various views of the role of rationality in economic analysis and in the economic decision making of individuals and institutions; determinants of individual preferences and decision making procedures; the experimental analysis of economic behaviour; inter-relations between the operation of the economic system and feelings of subjective well-being.

**Prerequisite:** Economics 357 or consent of the

Department.

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**Economics 483** **H(3-0)**

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**History of Economic Thought**

Traces the evolution of economic ideas from the earliest times up to and including the contributions of the classical economists and Marx. Emphasis will be on understanding these contributions both in terms of their historical context and their relationship to present-day theories and controversies.

**Prerequisites:** Economics 301 or 309; and 303 or 313; or consent of the Department.

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**Economics 491** **H(3-0)**

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**Comparative Economic Systems**

A comparative study of theories of the organization of economic systems with reference to the economic institutions of contemporary economies. Selected examples of the mixed capitalist system, command economies and transitional systems embodying markets and economic planning.

**Prerequisites:** Economics 301 or 309; and 303 or 313; or consent of the Department.

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**Economics 492** **F(3-0)**

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**Applied Energy Economics I**

An examination of selected problems in applied energy economics.

**Prerequisites:** Successful completion of all other required courses in the Applied Energy Economics program, with the exception of Economics 494, or consent of the Department.

**Note:** Normally only available to students registered in the Applied Energy Economics program.

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**Economics 494** **F(3-0)**

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**Applied Energy Economics II**

Participation in ongoing projects in applied energy economics at the Canadian Energy Research Institute (CERI).

**Prerequisites:** Successful completion of all other required courses in the Applied Energy Economics program with the exception of Economics 492, or consent of the Department.

**Note:** Normally only available to students registered in the Applied Energy Economics program.

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**Economics 499** **H(3-0)**

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**Selected Topics in Economics II**

A decimalized course in which topics will vary from year to year. Consult the timetable or the Department for the topics available in a given year.

**Prerequisites:** Economics 301 or 309; and Economics 303 or 313; or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

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**Economics 521** **H(3-0)**

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**Quantitative Economic Analysis**

Mathematical techniques of economic analysis. Required of and normally restricted to Master of Economics students.

**Prerequisite:** Consent of the Department.

**Note:** Credit for both Economics 521 and 387 will not be allowed.

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**Economics 523** **H(3-0)**

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**Econometrics**

Introduction to statistical techniques as they are used in Economics. Topics include: estimation and testing of hypotheses, single and simultaneous equation regression analysis, least squares and maximum likelihood estimation, and solution of practical econometric problems. Matrix notation is employed. Required of and normally restricted to Master of Economics students.

**Prerequisite:** Statistics 213 or equivalent; or consent of the Department.

**Prerequisite or Corequisite:** Economics 521.

**Note:** Credit for both Economics 523 and 315 will not be allowed.

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**Economics 527** **H(3-0)**

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**World Oil Economics**

Analysis of the world oil industry in the post war period.

**Prerequisites:** Economics 301 or 309; and 303 or 313; or consent of the Department.

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**Economics 529** **H(3-0)**

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**Microeconomics with Applications**

Intermediate microeconomic theory and welfare economics with special emphasis on applications. Topics include: demand theory and measurement; production and cost theory and measurement; market structure and pricing behaviour; pricing practices; regulation; antitrust law; and capital budgeting. Normally restricted to Master of Economics students.

**Prerequisite:** Consent of the Department. It is recommended that Economics 521 be taken prior to or concurrently with Economics 529.

**Note:** Credit for both Economics 529 and either 309 or 357 will not be allowed.

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**Economics 531** **H(3-0)**

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**Macroeconomics with Applications**

Intermediate macroeconomic theory with special emphasis on applications. Topics include: basic theories concerning employment, output, interest rates, the price level, business cycles and growth; contemporary thought on macro problems such as unemployment, inflation, and balance of payments disequilibrium; and Canadian macroeconomic policy issues. Normally restricted to Master of Economics students.

**Prerequisite:** Consent of the Department. It is recommended that Economics 521 be taken prior to Economics 531.

**Note:** Credit for both Economics 531 and either 313 or 359 will not be allowed.

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**Economics 537** **H(3-0)**

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**Theory and Policy of Economic Development**

Classical and Marxian theories of economic development, and theories of dual economy, balanced and unbalanced growth, population, choice of techniques, etc. A critical examination of the current national and international policies affecting economic development of developing countries will also be undertaken.

**Prerequisites:** Economics 301 or 309; and 303 or 313; or consent of the Department.

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**Economics 541** **H(3-0)**

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**Monetary Theory**

A survey of recent work in monetary theory with primary emphasis on financial issues.

**Prerequisites:** Economics 341 and 357 and 359; or consent of the Department.

**Prerequisite or Corequisite:** Economics 315.

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**Economics 557** **H(3-0)**

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**Topics in Economic Theory I**

Topics in microeconomic theory such as welfare economics and general equilibrium theory.

**Prerequisites:** Economics 357 and 389; or consent of the Department.

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**Economics 559** **H(3-0)**

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**Topics in Economic Theory II**

Topics in macroeconomic theory such as consumption and growth.

**Prerequisites:** Economics 315 and 359 and 389; or consent of the Department.

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**Economics 571** **H(3-0)**

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**Competition Policy**

The law and economics of competition policy. An examination of the economics, jurisprudence and history of competition policy towards mergers, price fixing, vertical restraints, and monopolization, primarily in Canada and the United States.

**Prerequisite:** Economics 471.

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**Economics 575** **H(3-0)**

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**Economics of Natural Resources II**

A variety of topics in the area of Natural Resource Economics. Resource production and exhaustion, resources management and conservation, and substitutions between natural resources may be examined.

**Prerequisite:** Economics 475 or consent of the Department.

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**Economics 599** **H(3-0)**

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**Selected Topics in Economics III**

A decimalized course in which topics will vary from year to year. Consult the timetable or the Department for the topics available in a given year.

**Prerequisites:** Economics 357 and 359; or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**Graduate Courses**

Students are required to have departmental consent before registering in any of the following courses:

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**Economics 601** **H(3-0)**

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**Applied Economics**

Provides students with an opportunity to apply microeconomic and macroeconomic theories to issues that are of interest to professional economists.

**601.01. History of Economic Thought**

**601.02. Financial Economics**

## 601.03. Cost-Benefit Analysis

## 601.04. Public Economics

**Prerequisites:** Economics 529 and 531; or consent of the Department.

**Note:** Restricted to Master of Economics students.

**Economics 605** H(3-0)

*Advanced Computational Optimization and Economic Applications I*

**Economics 607** H(3-0)

*Advanced Computational Optimization and Economic Applications II*

**Prerequisite:** Economics 605.

**Economics 611** H(3-0)

*Independent Study*

**MAY BE REPEATED FOR CREDIT**

**Economics 615** H(3-0)

*Advanced Econometrics I*

**Economics 617** H(3-0)

*Advanced Econometrics II*

**Prerequisite:** Economics 615 or consent of the Department.

**Economics 619** H(3-0)

*Economics of International Commercial Policy*

**Economics 621** H(3-0)

*International Trade*

**Economics 623** H(3-0)

*International Finance*

**Economics 627** H(3-0)

*Energy in the Production Sector of the Economy*

**Economics 633** H(3-0)

*The Nature and Structure of the Labour Market*

**Economics 635** H(3-0)

*Regulatory Economics*

**Economics 637** H(3-0)

*Advanced Development Economics*

**Economics 641** H(3-0)

*Monetary and Financial Economics*

**Economics 653** H(3-0)

*Public Revenue Analysis*

**Economics 655** H(3-0)

*Cost/Benefit Analysis*

**Economics 657** H(3-0)

*Microeconomic Theory*

**Economics 659** H(3-0)

*Macroeconomic Theory*

**Economics 663** H(3-0)

*Economics of Agricultural Production and Resource Use*

**Economics 667** H(3-0)

*Seminar in Industrial Organization*

**Economics 675** H(3-0)

*Advanced Topics in Natural Resource Economics*

**Economics 677** H(3-0)

*Seminar in Economics of the Environment*

**Economics 679** H(3-0)

(Medical Science 679)

*Health Economics I*

Applies basic concepts from economics to the examination of health and health care policy issues, such as why we have the kind of health care system we have, various aspects of health care reform, promotion of health, and evaluation in interventions.

**Prerequisite:** Consent of the Department.

**Economics 681** H(3-0)

(formerly Economics 611.79)

*Health Economics II*

**Economics 711** H(3-0)

*Independent Study*

**MAY BE REPEATED FOR CREDIT**

**Economics 715** H(3-0)

*Advanced Topics in Econometrics*

**Economics 757** H(3-0)

*Advanced Microeconomic Theory*

**Economics 759** H(3-0)

*Advanced Macroeconomic Theory*

In addition to the numbered and titled courses shown above, the Department offers a selection of advanced level Graduate Courses specifically designed to meet the needs of individuals or small groups of students. These courses are numbered in the series 800.01 to 899.99. Such offerings are, of course, conditional upon the availability of staff resources.

### Education In-Service EDIS

Instruction offered by members of the Faculty of Education in conjunction with school system personnel.

In-Service Coordinator – C. Webber

### Senior Course

**Education In-Service 513** Q(0-1.5S)

*Topics in the Teaching of Social Studies*

Specific content for these courses could arise from a new prescribed curriculum, from new resources, or

from new methods.

**Note:** Enrollment is normally restricted to certified teachers. Must be approved by the student's program advisor or supervisor for course to be eligible for credit toward a program requirement.

**NOT INCLUDED IN GPA**

### Education Teacher Preparation EDTP

**Note:** Additional Education courses are offered under the course headings Applied Psychology, Education In-Service, and Educational Research.

Instruction offered by members of the Division of Teacher Preparation in the Faculty of Education and by others.

Associate Dean – W.B. Clark

### Senior Courses

**Education Teacher Preparation 502** F(3-1S-7)

*Learners and Learning*

Understanding learning in psychological and sociological terms. Topics include individual differences, theories of learning, learning as a constructivist process, conditions for learning, patterns of growth and development, and assessment

**NOT INCLUDED IN GPA**

**Education Teacher Preparation 504** M(4-2S-7)

*Teachers and Teaching*

Examination of teaching in terms of its historical, practical, personal and ethical dimensions. Topics include teacher beliefs, life in classrooms, the ethics of teaching, roles and metaphors in teaching.

**Prerequisite:** Education Teacher Preparation 502.

**Note:** This course carries a weight of one and one-half full courses.

**NOT INCLUDED IN GPA**

**Education Teacher Preparation 506** F(3-1S-7)

*Curriculum Contexts*

Examination of the historical, institutional, social, cultural and political contexts of teaching and learning.

**Prerequisite:** Education Teacher Preparation 504.

**Corequisite:** Education Teacher Preparation 508.

**NOT INCLUDED IN GPA**

**Education Teacher Preparation 508** M(4-2S-7)

*Curriculum Studies*

Curriculum development and teaching practices specific to early childhood, elementary, secondary, and adult education. The pedagogical content of the disciplines and school divisions is emphasized. Students are grouped in areas of emphasis.

**Prerequisite:** Education Teacher Preparation 504.

**Corequisite:** Education Teacher Preparation 506.

**Note:** This course carries a weight of one and one-half full courses.

**NOT INCLUDED IN GPA**

**Education Teacher Preparation 510** M(3-2S-28)

*Praxis*

Extensive practicum focused on inquiry, reflective planning, teaching, and assessment practices. Students must design and facilitate case analyses during weekly seminars.

**Prerequisites:** Education Teacher Preparation 506 and 508.

**Note:** This course carries a weight of two and one-half full courses.

**NOT INCLUDED IN GPA**

## Education Teacher Preparation 512 M(6-2S-14)

### Integration

Integration of theoretical and practical understandings of teaching and learning. Emphasis placed on the relationships among teaching and learning, institutional contexts, professional ethics, and moral dimensions of education.

**Prerequisite:** Education Teacher Preparation 510.

**Note:** This course carries a weight of two and one-half full courses.

**NOT INCLUDED IN GPA**

## Education Teacher Preparation 597 H (0-3)

### Practicum in Designated Settings

**Note:** Requires consent of the Division of Teacher Preparation. Normally not available to students registered in the BEd (Master of Teaching Program).

**MAY BE REPEATED FOR CREDIT**

**NOT INCLUDED IN GPA**

## Education Teacher Preparation 598 F(3-0)

### Special Topics in Teacher Preparation

**MAY BE REPEATED FOR CREDIT**

**NOT INCLUDED IN GPA**

## Education Teacher Preparation 599 H(3-0)

### Special Topics in Teacher Preparation

**MAY BE REPEATED FOR CREDIT**

**NOT INCLUDED IN GPA**

## Educational Research EDER

Instruction offered by members of the Graduate Division of Educational Research.

Associate Dean – C. Webber

### Graduate Courses

## Educational Research 600 F(3-0)

### Seminar for First-Year MA/MSc Students

Will assist students in thinking about research questions and how to prepare a research proposal.

**NOT INCLUDED IN GPA**

## Educational Research 601 H(3-0)

### Interpreting Educational Research

Making sense of educational research as theory and practice mutually informing one another.

Intended for MEd students.

## Educational Research 603 H(3-0)

### Research Methods

Introduction to various approaches to research in education.

**MAY BE REPEATED FOR CREDIT**

## Educational Research 611 H(3-0)

### Communication in Educational Administration

To explore dominant areas of interpersonal communication which constantly challenge educational leaders.

**Note:** Not open to students with credit in Educational Policy and Administrative Studies 653.18 or Educational Research 699.74.

## Educational Research 613 H(3-0)

### Change and Innovation in Education

Examines both traditional and contemporary research literature relevant to change and innovation in educational settings.

**Note:** Not open to students with credit in Educational Policy and Administrative Studies 623 or Educational Research 699.73.

## Educational Research 615 H(3-0)

### Organizational Behaviour in Education

The behaviour of individuals and groups in the organizational context: Schools and educational organizations as a special case.

**Note:** Not open to students with credit in Educational Policy and Administrative Studies 627 or Educational Research 699.77.

## Educational Research 617 H(3-0)

### Organizational Theory and Analysis in Education

Human organization as the setting for the delivery of educational services.

**Note:** Not open to students with credit in Educational Policy and Administrative Studies 619 or Educational Research 699.72.

## Educational Research 619 H(3-0)

### Special Topics in Educational Leadership

Consult current timetable for offerings.

**MAY BE REPEATED FOR CREDIT**

## Educational Research 621 H(3-0)

### Assessment of Classroom Learning

Examines both traditional and emerging assessment techniques, including Performance Assessment and Learning Portfolios, for examining students' learning outcomes.

## Educational Research 625 H(3-0)

### Teacher Evaluation

Examines both traditional and emerging techniques, e.g. Portfolios, for assessing teacher performance.

## Educational Research 627 H(3-0)

### Program Evaluation

Systematically examines the evaluation enterprise including concepts, procedures and uses of evaluation.

**Prerequisite:** Educational Research 601 or equivalent.

## Educational Research 629 H(3-0)

### Special Topics in Assessment/Evaluation

Consult current timetable for offerings.

**MAY BE REPEATED FOR CREDIT**

## Educational Research 640 F(3-0)

### Teaching and Learning Across the Curriculum

Develops a critical foundation for understanding and promoting active learning across the subject areas.

**Note:** Not open to students with credit in Educational Research 649.03 or 649.04.

## Educational Research 641 H(3-0)

### (formerly Educational Research 699.20)

### Research on the Reading Process

Examination and criticism of competing theoretical discourses about the teaching and learning of reading in the elementary school.

## Educational Research 643 H(3-0)

### Foundational Research in Language Arts Teaching

Theory, research, and advocated instructional practices. Emphasis on the role of oral language in classrooms and the teaching of writing.

**Note:** Not open to students with credit in Curriculum and Instruction 638 or Educational Research 699.21.

## Educational Research 645 H(3-0)

### Implications of Literacy

Exploration of the implications of literacy on both a societal and individual level; attention to specialized literacies of our culture.

**Note:** Not open to students with credit in Educational Research 649.05 or 699.44.

## Educational Research 649 H(3-0)

### Special Topics in English Language Education

**MAY BE REPEATED FOR CREDIT**

## Educational Research 651 H(3-0)

### Philosophy of Education

Philosophical topics in the context of education. Consult current timetable for offerings.

**MAY BE REPEATED FOR CREDIT**

## Educational Research 653 H(3-0)

### Sociology of Education

Sociological topics in the context of education.

Consult current timetable for offerings.

**MAY BE REPEATED FOR CREDIT**

## Educational Research 655 H(3-0)

### Comparative Education

Topics in comparative education. Consult current timetable for offerings.

**MAY BE REPEATED FOR CREDIT**

## Educational Research 657 H(3-0)

### Culture and Gender Studies

Culture and gender topics in the context of education. Consult current timetable for offerings.

**MAY BE REPEATED FOR CREDIT**

**Educational Research 659** H(3-0)**History of Education**

Historical topics in the context of education.

Consult current timetable for offerings.

**MAY BE REPEATED FOR CREDIT**

**Educational Research 667** H(3-0)**Second Language Reading and Writing**

Research and practice in second language reading and writing; instructional techniques for specific audiences; theories of reading and writing.

**Educational Research 669** H(3-0)**Aspects of Second Language and Culture**

Introduction to research and issues on various aspects of second language and culture.

**MAY BE REPEATED FOR CREDIT**

**Educational Research 671** H(3-0)  
(formerly Curriculum and Instruction 671.01)**Conceptualizing Educational Technology**

Seminar to familiarize students with the terrain of educational technology.

**Educational Research 673** H(3-0)**Instructional Design**

Integration of theory and practice associated with the selection and sequencing of content across the instructional spectrum and the matching of instructional strategies to characteristics of learners and content.

**Educational Research 675** H(3-0)  
(formerly Curriculum and Instruction 661)**Principles of Instructional Development**

Topics include the examination of a variety of instructional development models, the systems approach to developing instruction, front-end analysis and needs assessment, risk analysis, constraint analysis, resource analysis, task analysis, and evaluation.

**Educational Research 677** H(3-0)**Telecommunications in Education**

Examination of the role of communications media in current and future educational systems. Particular attention is given to computer-mediated communications, but television, audio, facsimile and other technologies are considered. Readings address issues in innovation and change in education.

**Educational Research 679** H(3-0)**Special Topics in Educational Technology**

Examination of current topics and issues in educational technology and related areas.

**MAY BE REPEATED FOR CREDIT**

**Educational Research 681** H(3-0)**Studying Curriculum**

Curriculum research, theory, and practice with particular reference to curriculum aims, content, organization and change.

**Note:** Not open to students with credit in Curriculum and Instruction 605 or Educational Research 665, 669.27 or 699.42.

**Note:** For Curriculum Master's students.

**Educational Research 683** H(3-0)  
(formerly Educational Research 669.28)**Curriculum Development, Implementation and Assessment**

Making sense of what happens when curriculum policy becomes reality and affects students, teachers, parents and politicians.

**Prerequisite:** Educational Research 681 or equivalent.

**Note:** Not open to students with credit in Curriculum and Instruction 609.

**Educational Research 685** H(3-0)**Introduction to Interpretive Curriculum Discourses**

An introduction to the field of interpretive work in curriculum theory.

**Educational Research 689** H(3-0)**Aspects of School Curriculum**

Introductory systematic study of research and issues focused on various areas of the school curriculum.

**Note:** For Master's students.

**MAY BE REPEATED FOR CREDIT**

**Educational Research 690** F(3-0)**Professional Project**

Seminar course to facilitate the preparation and evaluation of an independent culminating project.

**Educational Research 691** H(3-0)**Critical Issues in Education**

Culminating course focusing on the integration and application of major themes covered in student's program.

**Educational Research 697** Q(1.5-0)**Special Topics**

**MAY BE REPEATED FOR CREDIT**

**Educational Research 698** F(3-0)**Special Topics**

**MAY BE REPEATED FOR CREDIT**

**Educational Research 700** F(3-0)  
(formerly Educational Research 602)**Seminar for First-Year PhD/EdD Students**

Seminar on selected topics.

**Prerequisite:** Consent of the Division.

**Note:** Normally restricted to Doctoral students.

**NOT INCLUDED IN GPA**

**Educational Research 701** H(3-0)**Advanced Research Methods**

Advanced study in the conduct of research.

**Note:** Normally restricted to Doctoral students.

**MAY BE REPEATED FOR CREDIT**

**Educational Research 703** H(3-0)**Directed Study**

Individual doctoral study in a selected area.

**Prerequisite:** Consent of the Division.

**MAY BE REPEATED FOR CREDIT**

**Educational Research 705** H(3-0)  
(formerly Educational Research 619.24)**Doctoral Seminar in Educational Leadership**

Provides doctoral students with a contemporary Canadian focus on significant issues in educational leadership.

**Prerequisite:** Consent of the Division.

**Note:** Normally restricted to Doctoral students.

**Educational Research 741** H(3-0)**Advanced Seminar in Theory and Research in Literacy Education**

A critical examination of theories, models, and research that underpin literacy education.

**Prerequisite:** Consent of the Division.

**Note:** Normally restricted to Doctoral students.

**Educational Research 761** H(3-0)**Research Seminar on Second Language Education**

Multidimensional perspectives on theory building about second language learning and teaching, including factors such as language, schooling, curriculum, culture, community and society.

**Prerequisite:** Consent of the Division.

**Note:** Normally restricted to Doctoral students.

**Educational Research 763** H(3-0)**Research Seminar on Current Issues in L2 Literacy**

Current issues in L2 literacy, such as assessment theory and practice, literacy in social contexts, language proficiency, curriculum and pedagogy.

**Prerequisite:** Consent of the Division.

**Note:** Normally restricted to Doctoral students.

**Educational Research 771** H(3-0)**Doctoral Seminar in Educational Technology**

Advanced doctoral seminar focused on defining issues and current research in educational technology.

**Prerequisite:** Consent of the Division.

**Educational Research 781** H(3-0)  
(formerly Educational Research 669.18)**Conceptualizing Curriculum Research**

Analysis of different approaches to curriculum research, especially assumptions, meaning frameworks, and views of the theory/practice relationship.

**Prerequisite:** Consent of the Division.

**Note:** Not open to students with credit in Curriculum and Instruction 701.

**Note:** Normally restricted to Doctoral students.

**Educational Research 783** H(3-0)  
(formerly Educational Research 669.17)**Conceptualizing Instructional Research**

Critical examination of various theoretical frameworks and representative studies in the literature of

research on instruction.

**Prerequisite:** Consent of the Division.

**Note:** Not open to students with credit in Curriculum and Instruction 703.

**Note:** Normally restricted to Doctoral students.

## **Educational Research 785** **H(3-0)**

### **Advanced Study of Interpretive Curriculum Discourses**

An advanced study of interpretive curriculum discourses focussing on cutting-edge examples of such work.

**Prerequisite:** Consent of the Division.

**Note:** Normally restricted to Doctoral students.

## **Educational Research 789** **H(3-0)**

### **Advanced Curriculum Study**

Research and issues in the study of a variety of topics and areas concerning the school curriculum.

**Prerequisite:** Consent of the Division.

**Note:** Normally restricted to Doctoral students.

**MAY BE REPEATED FOR CREDIT**

## **Electrical Engineering ENEL**

Instruction offered by members of the Department of Electrical and Computer Engineering in the Faculty of Engineering.

Department Head – L.J. Leon

Associate Heads – S.A. Norman (Undergraduate), A. Sesay (Graduate)

Director of Undergraduate Program for Electrical Engineering – L.E. Turner

Director of Undergraduate Program for Computer Engineering – S.A. Norman

Director of Undergraduate Program for Software Engineering – A. Eberlein

## **Electrical Engineering 007** **H(20 hours)**

### **Electrical Engineering Fourth-Year Block Course**

This block course is intended to provide the necessary background material to prepare students for the fourth year Team Design Project. Topics covered include: personal responsibilities and interpersonal relationships involved in a team project; team projects from a current industrial perspective; tools to automate project management, e.g. PERT charts, critical path analysis, resource management, report generation and project tracking.

**Prerequisite:** Fourth year standing in the Department of Electrical and Computer Engineering.

**NOT INCLUDED IN GPA**

### **Senior Courses**

## **Electrical Engineering 327** **H(3-1T-3/2)**

### **Signals and Transforms**

Continuous-time systems and differential equations. Continuous-time impulse response and convolution, characteristic roots and modes. Time-domain analysis of discrete-time systems. Z-transform analysis. Fourier series and Fourier transform.

**Prerequisite:** Electrical Engineering 329 or 341 or Engineering 325.

## **Electrical Engineering 329** **H(3-1T-3/3)**

### **Circuits for Software Engineers**

Basic circuit laws, node and mesh analysis. First order RC circuits. DC and transient analysis. Overview of basic semiconductor devices and circuits. Fundamentals of logic circuits. CAD tools for circuit analysis.

**Prerequisite:** Physics 259.

## **Electrical Engineering 341** **H(3-1T-3/2)**

### **Circuits I**

Definition of linear elements, independent and dependent sources, sign conventions; basic circuit laws, simple resistive circuits; node and mesh analysis. Thevenin, Norton and other theorems; inductance and capacitance. AC circuit analysis, impedance, admittance, phasor diagrams; average and effective values of waveforms, real, reactive and complex power, power calculations; mutual inductance, ideal transformer, introduction to balanced three-phase circuits, power calculation in three-phase circuits.

**Prerequisite:** Physics 259.

## **Electrical Engineering 343** **H(3-1T-3/2)**

### **Circuits II**

The operational amplifier. Natural and step responses of first order RL and RC circuits. Natural and step responses of RLC circuits. Series and parallel resonance. Laplace transform methods. The Laplace transform in circuit analysis. The transfer function. Fourier series. The Fourier transform. Two-port circuits. Two-port circuit parameters: admittance, impedance and hybrid parameters.

**Prerequisites:** Electrical Engineering 341 and Applied Mathematics 307.

## **Electrical Engineering 353** **H(3-1T-3/2)**

### **Digital Circuits**

Combinational logic: number systems, truth tables, Karnaugh maps, minterms, maxterms. Sequential circuits, JK and D flip flops, state diagrams and synthesis techniques. Memory based logic functions. Gates, buffers, counters, multiplexers, demultiplexers and registers. Medium and large scale integration in sequential design.

**Prerequisites:** (Computer Science students only) Computer Science 233 and Mathematics 271.

**Corequisite:** Computer Engineering 339.

**Note:** Credit for both Electrical Engineering 353 and Computer Science 321 will not be allowed.

## **Electrical Engineering 361** **H(3-1T-3/2)**

### **Electronic Materials**

Properties of atoms in materials, classical free electron model, conduction electrons in materials, quantum model and band electrons. Electro-optical and magnetic properties of metals, semiconductors and insulators. Application of electronic materials in semiconductor technology, solid state optical devices, sensors and transducers.

**Prerequisites:** Physics 259 and one of 269 or 369.

## **Electrical Engineering 409** **H(3-2)**

### **Principles of Software Development**

A survey of software design and development topics for Electrical Engineering students. Topics include: key features of an object-oriented programming language, especially inheritance and polymorphism;

elements of object-oriented design; programming and application of common data structures; strategies and tools for testing and debugging.

**Prerequisite:** Computer Engineering 339.

## **Electrical Engineering 441** **H(3-1T-3/2)**

### **Control Systems I**

Component block diagram of feedback control systems and examples. Mathematical modelling of dynamic systems; state-space representation and frequency domain representation of dynamic systems. Basic control actions and industrial controllers. Transient response analysis and steady-state error analysis. Root-locus analysis and design. Frequency response analysis; Nyquist stability criterion and analysis. Design and compensation techniques. Introduction to digital control systems.

**Prerequisite:** Electrical Engineering 327.

## **Electrical Engineering 453** **H(3-1T-3/2)**

### **Digital Systems Design**

Design, implementation and testing of a digital system. Mask programmable and field programmable technology. Logic design for integrated systems. Design for testability. Real versus ideal logic design. CAD tools for digital systems design: simulation, synthesis and fabrication.

**Prerequisites:** Computer Engineering 415 and one of Electrical Engineering 463 or Computer Engineering 467.

## **Electrical Engineering 463** **H(3-1T-3/2)**

### **Electronic Devices and Circuits**

Analysis and design of circuits containing diodes, bipolar transistors and MOSFETs. Physical operation of semiconductor devices. Current and voltage characteristics. Regions of operation. Large and small signal models. Diode and transistor circuits.

**Prerequisites:** Electrical Engineering 343 and 361.

## **Electrical Engineering 465** **H(3-1T-3/2)**

### **Analog Integrated Electronics**

Introduction to analog integrated circuits. Review of semiconductor diodes, bipolar and MOS transistors. CMOS, Bipolar and BICMOS technologies. Analog bipolar and MOS subcircuits. Bipolar and CMOS Operational Amplifiers. Non-ideal behaviour of operational amplifiers. Commercial amplifiers. Operational transconductor amplifiers. Applications. Power Amplifiers. Power Supplies.

**Prerequisite:** Electrical Engineering 463.

## **Electrical Engineering 471** **H(3-1T-3/2)**

### **Analog Communications**

Fundamentals of communication systems; signals and system classifications. Signal analysis; Fourier series and Fourier transform. Systems analysis; filters, time-domain and Frequency-domain analysis. Analog modulation; linear continuous wave and nonlinear continuous wave modulation; generation and detection of analog modulated waves. Applications of analog modulation. Noise in analog modulation; comparison of analog modulations.

**Prerequisite:** Electrical Engineering 327.

## **Electrical Engineering 475** **H(3-1T-3/3)**

### **Fundamentals of Electromagnetic Fields**

The Field approach to steady electric and magnetic

fields, electric and magnetic potential gradients. Gauss's laws, Laplace's and Poisson's equations, graphical field mapping, finite difference methods, conservation of charge and equation of continuity. Quasi-static fields, Faraday's law, magnetic circuits and materials. Maxwell's equations, boundary conditions at the interface between two media. Wave equations, uniform plane wave propagation, polarization, loss tangent, skin effect, Poynting vector and electromagnetic power flow. Reflection and refraction of uniform plane waves, interference phenomenon, standing wave ratio, impedance matching.

**Prerequisites:** Physics 259 and Applied Mathematics 309.

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### Electrical Engineering 489 H(3-1T-3/2)

#### *Electric Machines: Steady-State*

dc and ac excitation of magnetic circuits; transformers; principles of electromechanical energy conversion. Steady-state analysis and operation of dc, synchronous and induction machines.

**Prerequisite:** Electrical Engineering 341.

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### Electrical Engineering 519 H(3-2)

#### *Special Topics in Electrical Engineering*

Current topics in electrical engineering.

**Prerequisite:** Consent of the Department.

**Note:** Consult Department for announcement of topics.

**MAY BE REPEATED FOR CREDIT**

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### Electrical Engineering 525 H(3-2) (formerly Electrical Engineering 519.17)

#### *Neuro-Fuzzy and Soft Computing*

Neural networks: neuron models and network architectures; perceptrons; Widrow-Hoff learning and the backpropagation algorithm; associative memory and Hopfield networks; unsupervised learning. Fuzzy systems: basic operations and properties of fuzzy sets; fuzzy rule generation and defuzzification of fuzzy logic; fuzzy neural networks. Applications in areas such as optimization, signal and image processing, communications, and control. Introduction to genetic algorithms and evolutionary computing. Introduction to chaos theory.

**Prerequisite:** Electrical Engineering 327.

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### Electrical Engineering 527 H(3-2)

#### *Design and Implementation of FPGA-Based DSP Systems*

The design and implementation of digital systems for digital signal processing applications. Introduction to Hardware Design Languages.

VHDL. Introduction to digital filter design and computational units for digital arithmetic. Interface standards. Interfacing to peripheral devices. Printed circuit board design and implementation. Design for testability.

**Prerequisites:** Electrical Engineering 453 and 471.

**Note:** Credit for both Electrical Engineering 527 and either Computer Engineering 519.27 or Electrical Engineering 519.27 will not be allowed.

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### Electrical Engineering 529 H(3-1T-1)

#### *Wireless Communications Systems*

Overview of terrestrial wireless systems including system architecture and industry standards; propagation characteristics

of wireless channels; modems for wireless communications; cells and cellular traffic; cellular system planning and engineering; fading mitigation techniques in wireless systems; multiple access techniques for wireless systems.

**Prerequisites:** Engineering 319 and Electrical Engineering 471.

**Note:** Credit for both Electrical Engineering 529 and any of Computer Engineering 519.29, Electrical Engineering 519.29 or Software Engineering for Engineers 519.29 will not be allowed.

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### Electrical Engineering 541 H(3-1T-3/2)

#### *Control Systems II*

Introduction to sampled-data control systems, discretization of analog systems, discrete-time signals and systems, causality, time-invariance, z-transforms, stability, asymptotic tracking, state-space models, controllability and observability, pole assignment, deadbeat control, state observers, observer-based control design, optimal control.

**Prerequisite:** Electrical Engineering 441.

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### Electrical Engineering 559 H(3-2) (formerly Electrical Engineering 519.13)

#### *Analog Filter Design*

This class deals with the theory and design of active filters, for audio-frequency applications, using op amps. It consists, basically, of two phases. Phase I deals with the realization of a given transfer function using cascade of first and/or second-order RC-op amps circuits. In phase II, the transfer functions of filters are studied in combination with frequency-response approximations such as Butterworth, Chebyshev, Inverse-Chebyshev, Causer (or Elliptic) and Bessel-Thompson.

**Prerequisites:** Electrical Engineering 465 and 471.

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### Electrical Engineering 563 H(3-1T-2) (formerly Electrical Engineering 519.02)

#### *Biomedical Signal Analysis*

Introduction to the electrocardiogram, electroencephalogram, electromyogram, and other diagnostic signals. Computer techniques for processing and analysis of biomedical signals. Pattern classification and decision techniques for computer-aided diagnosis. Case studies from current applications and research.

**Prerequisite:** Electrical Engineering 471.

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### Electrical Engineering 565 H(3-1T-3/2)

#### *Digital Integrated Electronics*

Linear-wave shaping, nonlinear transfer function realization, semiconductor device switching, charge control analysis, modelling of BJT and MOS switching, BJT and MOS logic, performance and comparison of logic families, tristate logic, semiconductor memories, design and fabrication of digital IC's.

**Prerequisite:** Electrical Engineering 465.

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### Electrical Engineering 567 H(3-1T-3/2)

#### *CMOS VLSI Engineering*

Introduction to CMOS very large-scale integrated (VLSI) circuit design. Review of MOS transistor theory and operation. Introduction to CMOS circuits. CMOS processing technology and design rules. Circuit characterization and performance estimation. CMOS circuit and logic design. VLSI design methods and tools. Basic concepts of design for testability. CMOS subsystem and system design.

**Prerequisite:** Electrical Engineering 465 or Computer Engineering 467.

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### Electrical Engineering 569 H(3-1T-3/2)

#### *Electronics for Instrumentation*

Error analysis. Component specification. Power supplies. Switched power supplies. Operational amplifier non-idealities. Noise in devices. Instrumentation and isolation amplifiers. Logarithmic principles. Multipliers, dividers. RMS to DC conversion. Voltage-to-frequency conversion. Bridge circuits.

**Prerequisite:** Electrical Engineering 465.

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### Electrical Engineering 571 H(3-1T-3/2)

#### *Digital Communications*

Fundamentals of digital communication systems. Digital coding of analog waveforms; digital pulse modulation, pulse code modulation, delta modulation. Intersymbol interference; baseband transmission, correlative coding. Probability theory. Optimal demodulation of data transmission; matched filtering; bit error rate.

**Prerequisite:** Electrical Engineering 471.

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### Electrical Engineering 573 H(3-1T-1)

#### *Telecommunications and Computer Communications*

Fundamentals of telecommunication system and teletraffic engineering; transmission systems; switching networks and congestions. Characterization of teletraffic; queueing theory; mathematical modelling of queueing systems; the birth and death process. Erlang loss and delay formulas; Engset loss and delay formulas. Computer communication networks; multiple access techniques.

**Prerequisite:** Engineering 319.

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### Electrical Engineering 575 H(3-1T-3/2)

#### *Microwave Circuits and Antennas*

Antennas; radiation patterns, arrays, pattern multiplication, aperture antennas, propagation. Microwaves; applications, radiation hazards, waveguides and transmission lines, components, matching klystrons, travelling wave tubes and magnetrons. Solid state microwave devices.

**Prerequisite:** Electrical Engineering 475.

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### Electrical Engineering 579 H(3-1T-3/2)

#### *Optical Fibre Communications*

Electromagnetic wave propagation and Maxwell's equations. Modal analysis of the dielectric slab waveguide together with the step-index and graded-index cylindrical optical fibre. Dispersion and attenuation. Fibre design considerations and a review of fibre chemistry and production techniques. Measurement of fibre parameters. Optical transmitters, photodetectors and receivers, modulation, multiplexing, splices and connectors. Multiterminal analog and digital network analysis and design. Optical fibre local area networks. Optical switching and integrated optics.

**Prerequisite:** Fourth year standing in Electrical Engineering.

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### Electrical Engineering 583 H(2-4) (formerly Electrical Engineering 519.03)

#### *Fourth Year Electrical Engineering Team Design Project, Part A*

Introduction to the theory, experience and practice of project management. Theory includes generally accepted project management principles, the structure of both project and team, together with



ancillary topics that commonly affect project outcome. The experience is gained from a series of guest lectures by industrial practitioners with engineering background. The practice is obtained through the performance of a "customer suggested" team project through the stages of project requirement and specification analysis, high level and detailed low level designs. The project is executed, and progress measured against a plan developed by the team participants.

**Prerequisite:** Electrical Engineering 007.

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**Electrical Engineering 585** **H(3-2)**

**Introduction to Power Electronics**

Commutation. Diode rectifiers. Fully controlled 3-phase rectifiers. Choppers, inverters, ac controllers. Single-phase switch mode converters: dc-to-dc, ac-to-dc, dc-to-ac. Circuit and state-space averaging techniques. Switching devices and magnetics.

**Prerequisite:** Electrical Engineering 465.

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**Electrical Engineering 587** **H(3-1.5T-3/4)**

**Power Systems: Steady State**

Three-phase systems, per unit representation, power system elements and configurations, transmission system representation and performance, load flow studies, symmetrical components, fault studies, HVdc transmission, economics of power generation.

**Prerequisite:** Electrical Engineering 489.

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**Electrical Engineering 589** **H(2-4)**  
(formerly Electrical Engineering 519.04)

**Fourth Year Electrical Engineering Team Design Project, Part B**

Continues upon the foundations of theory, experience and practice of project management established in Part A. The detailed low-level project design developed by the team in Part A will be implemented, unit tested, integrated and system tested before undergoing customer trials. The project is executed and progress is measured against a plan developed by the participants.

**Prerequisite:** Electrical Engineering 583.

**Note:** Electrical Engineering 007, 583 and 589 are a required three-course sequence that shall be completed in the same academic year.

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**Electrical Engineering 591** **H(2-4)**

**Individual Electrical Engineering Project, Part II**

This individual project is intended for students who have completed a suitable Electrical Engineering 599 Individual Project and wish to continue the assigned research project by completing a more extensive investigation. A comprehensive written report is required which is defended and presented orally in a department seminar.

**Prerequisites:** Electrical Engineering 599 and formal approval from the project supervisor and course coordinator(s).

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**Electrical Engineering 593** **H(3-1T-2/2)**

**Digital Filters**

Discrete-time systems. The Z transform and its properties. Sampling and aliasing. Input-output and state-variable representations. Recursive and nonrecursive discrete-time filter structures. Time-domain and frequency-domain analysis. Classifica-

tion and design of filter transfer functions. Bilinear transform. Implementations in software and hardware. Nonideal performance, finite precision arithmetic, limit cycles, noise, dynamic range, scaling. Applications in engineering, chosen from telecommunications, audio hi-fi, television, graphics, multimedia.

**Prerequisite:** Electrical Engineering 327.

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**Electrical Engineering 598** **F(2-4)**

**Individual Electrical Engineering Research Project**

The project involves individual work on an assigned Electrical Engineering research topic under the supervision of a Departmental faculty member. Submission and defense of a mid-year written report is required. A final comprehensive written report is required which is defended and presented orally in a departmental seminar format.

**Prerequisites:** Fourth year standing and formal approval from the project supervisor and course coordinator(s).

**Note:** Credit for both Electrical Engineering 598 and either 591 or 599 will not be allowed.

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**Electrical Engineering 599** **H(2-4)**

**Individual Electrical Engineering Project**

This project involves individual work on an assigned Electrical Engineering topic under the supervision of a faculty member. The topic would normally involve a literature review, theoretical and experimental or computer work. Submission and defence of a written formal report is required.

**Prerequisite:** Formal approvals from the project supervisor and course coordinator(s).

**Graduate Courses**

Registration in all courses requires the approval of the Department of Electrical and Computer Engineering.

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**Electrical Engineering 601** **H(3-1.5)**

**Power System Operation**

Energy transfer in power systems; real and reactive power flows; VAR compensation. Power system control, interconnected operation. Power system stability, techniques of numerical integration. Load representation, power quality. Computational paradigms for typical power system problems. Computer simulation of representative power system problems.

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**Electrical Engineering 603** **H(3-0)**

**Rotating Machines**

General theory of rotating machines providing a unified approach to the analysis of machine performance. General equations of induced voltage and torque. Transient performance of machines.

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**Electrical Engineering 605** **Q(1.5S-0)**

**Research Seminar**

Reports of studies of the literature or of current research. This course is compulsory for all full-time graduate students.

**NOT INCLUDED IN GPA**

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**Electrical Engineering 607** **Q(1.5S-0)**

**Research Seminar**

Reports of studies of the literature or of current research. This course is compulsory for all full-time graduate students.

**NOT INCLUDED IN GPA**

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**Electrical Engineering 609** **Q(3-1)**

**Special Topics**

Designed to provide graduate students, especially at the PhD level, with the opportunity of pursuing advanced studies in particular areas under the direction of a faculty member.

**MAY BE REPEATED FOR CREDIT**

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**Electrical Engineering 611** **H(3-1)**

**Digital Systems**

Introduction to digital system design for mask programmable and field programmable gate arrays. CMOS digital logic design. Flip-flop timing and metastability. Design for testability. CAD tools for digital systems design.

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**Electrical Engineering 619** **H(3-1)**

**Special Problems**

Designed to provide graduate students, especially at the PhD level, with the opportunity of pursuing advanced studies in particular areas under the direction of a faculty member.

**MAY BE REPEATED FOR CREDIT**

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**Electrical Engineering 621** **H(3-1)**  
(formerly Electrical Engineering 619.10)

**Advanced Object Oriented Systems**

Presents a deep view of object oriented, component based software development. Analyses the main features of object orientation (aggregation, inheritance, virtuality) under the perspective of component based development; analysis, design, and code patterns; frameworks; static and dynamic architectures; component libraries object oriented compiler generators. The students will experiment component based software development using UML, Java, JavaCC, and suitable component libraries, such as JGL and Swing.

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**Electrical Engineering 623** **H(3-1)**  
(formerly Electrical Engineering 619.11)

**Biomedical Instrumentation**

Introduction to biomedical instrumentation. The four elements of an electronic monitoring system. Errors and error handling. Instrument modelling. Sensors: Basic concepts. Conversion of different processes into voltages or currents. Introduction to biomedical amplifiers. Ideal op amp. The concept of patient protection. Differential and instrumentation amplifiers. Non-idealities in biomedical amplifiers. Noise and noise sources. Error analysis. Offsets and offset compensation. Power supplies for instrumentation circuits. Frequency characteristics of biomedical amplifiers. Frequency conditioning circuits. Active filters. Isolation amplifiers and details on patient protection. Analog-to-Digital conversion. Basic principles and conversion errors. Nyquist theorem of discretization and antialiasing requirements. Multichannel data acquisition. Real-time requirements. Real-time digital conditioning of monitored biomedical signals. The concept of closed-loop real-time control of biomedical systems.

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**Electrical Engineering 625** **H(3-1)**  
(formerly Electrical Engineering 619.18)

**Detection and Estimation Theory**

Detection and estimation theory as it is applied in communication systems, as well as measurement systems in radar, biomedical engineering, geomatics etc. The specific topics covered are: Sufficient statistics, Hypothesis testing, Neyman-Person Detectors, Bayesian Detectors, Minimum Variance Unbiased Estimators, Maximum Likelihood Estimators, Cramer-Rao Lower Bounds, Bayesian Estimators, Minimum Mean Squared Error Estimators, Least Squares Estimators, Linear Prediction. Applications in communications and measurement systems. An emphasis will be put upon modern methods in detection and estimation, in particular subspace methods.

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**Electrical Engineering 627** H(3-1)  
 (formerly Electrical Engineering 619.50)
 

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**Antennas**

Foundations of theory and practice of modern antennas. Topics covered will include: theoretical background, antenna parameters, simple radiators, antenna array theory, wire antennas, broadband antennas, microstrip antennas, aperture radiators, base station antennas, antennas for mobile communications, antenna measurements.

**Note:** Students registering in this course should have a background in electromagnetics and basic microwave engineering.

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**Electrical Engineering 629** H(3-1)  
 (formerly Electrical Engineering 619.05)
 

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**Advanced Logic Design**

The topics covered are: two-level and multi-level logic synthesis; flexibility in logic design; multiple-valued logic for advanced technology; multi-level minimization; Binary Decision Diagrams, Word-level Decision Diagrams, sequential and combinational equivalence checking; technology mapping; technology-based transformations; logic synthesis for low power, optimizations of synchronous and asynchronous circuits, logical and physical design from a flow perspective.

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**Electrical Engineering 631** H(3-1)  
 (formerly Electrical Engineering 619.66)
 

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**System Identification and Parameter Estimation**

Parametric models of linear time-invariant systems. System and noise models. Estimation of model parameters. Structure and order selection. Model validation. Convergence and sensitivity analysis. Experiment design. MIMO systems. Subspace methods. Introduction to nonlinear and/or time-varying systems.

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**Electrical Engineering 633** H(3-1)  
 (formerly Electrical Engineering 619.96)
 

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**Wireless Networks**

Overview of the components and architectural alternatives for wireless networks. Review of existing and proposed wireless network standards (e.g. Advanced Mobile Phone System - AMPS, Digital AMPS, Interim Standard 95 - IS95, Global System for Mobile Communications - GSM, Code division Multiple Access 2000 - CDMA 2000, Universal Mobile Telecommunications System - UMTS, etc.). Discussion of wireless network communication protocols including network access control protocols, routing congestion and flow control protocols, mobility and resource management protocols. Modelling and analysis of wireless network performance in the context of voice, data and video services, making use of mathematical and simulation techniques. Outline of current and future research challenges in wireless networks.

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**Electrical Engineering 635** H(3-0)


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**Semiconductor Devices**

Basic electronic conduction processes. Carrier statistics. Generation and recombination. Photo-electric effect. P-n junction theory, diodes. The bipolar transistor and field effect transistors: DC theory, frequency response. Metal-insulator-semiconductor systems including memory devices. Programmable read-only memory, random-access memory, access time and power requirements of solid state memories.

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**Electrical Engineering 639** H(3-1)


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**Radio Frequency and Microwave Circuit Design**

Circuit design via transmission line elements: special emphasis on microstrip circuits and effects of discontinuities (corners, Tees, and impedance steps). Analysis of passive impedance matching and filtering circuits using distributed and lumped elements. Narrow band matching and wide band matching techniques as well as wide band matching to a complex load. One and two port small signal amplifiers. Scattering parameter design methods: amplifier gain, input and output matching and stability. Computer aided design methods and broadband design methods. Large signal transistor amplifiers: device nonlinearities and design methodologies.

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**Electrical Engineering 643** H(3-1)


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**Fibre Optics Transmission**

Fundamental theory of cylindrical optical waveguides by way of Maxwell's equation and the modal analysis of the slab waveguides, step-index and graded-index fibres, review of fibre chemistry and production techniques. Problem areas relating to measurement of fibre parameters. Optical transmitters, photodetectors and receivers, modulation and multiplexing techniques, splices and connectors. Multiterminal analog and digital system analysis and design. Optical switching and amplification, integrated optics.

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**Electrical Engineering 647** H(3-1)


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**Analog Integrated Circuit Design**

Review of static and dynamic models of bipolar and field effect transistors. Basics of analog integrated circuit design. Computer-aided modelling. Fabrication processes and their influence on analog design. Operational voltage amplifier and transconductance amplifier design techniques. Case studies of bipolar and complementary metal oxide semiconductor (CMOS) designs. CMOS analog integrated circuit design project.

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**Electrical Engineering 655** H(3-1)


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**Discrete Time Signal Processing**

Discrete-time signals and systems, discrete-time Fourier transform and Fourier series, discrete-time random signals, linear time-invariant systems. Sampling of continuous-time signals, decimation and interpolation. Fundamentals of multirate systems, special filters and filter banks. The z-transform, transform analysis of linear time-invariant systems. Structures for discrete-time systems, FIR and IIR structures, finite-precision arithmetic effects. Filter design techniques. The discrete Fourier transform. Discrete Hilbert transforms.

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**Electrical Engineering 659** H(3-1)


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**Active-RC and Switched-Capacitor Filter Design**

The filter design problem; operational amplifier characteristics; cascade methods of RC-active filter design; filter design with the active biquad; active filter design based on a lossless ladder prototype. Switched-capacitor (SC) integrators; design of cascade, ladder, and multiple feedback SC filters; nonideal effects in SC filters; scaling of SC filters; topics in fabrication of SC filters.

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**Electrical Engineering 671** H(3-1)


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**Adaptive Signal Processing**

Fundamentals: Performance objectives, optimal filtering and estimation, the Wiener solution, orthogonality principle. Adaptation algorithms: MSE performance surface, gradient search methods, the Widrow-Hoff LMS algorithm, convergence speed and misadjustment. Advanced techniques: recursive least-squares algorithms, gradient and least-squares multiple filter, frequency domain algorithms, adaptive pole-zero filters. Applications: system identification, channel equalization, echo cancellation, linear prediction, noise cancellation, speech.

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**Electrical Engineering 673** H(3-1)


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**Wireless Communications Engineering**

The basics of mobile radio telephone: mobile telephone frequency channels, components of mobile radio, objectives of mobile telephone systems, major problems and tools available. The mobile radio environment: fading and propagation loss, propagation loss prediction, channel and signal models, fading statistics, classification of fading channels. Methods of reducing fading effects: diversity techniques and diversity combining methods. Signaling over fading channels. Frequency reuse schemes: cellular concept, mobile radio interference, FDMA, TDMA, and spread spectrum techniques. Portable systems, air-to-ground systems, and land mobile/satellite systems, processing.

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**Electrical Engineering 675** H(3-1)


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**Introduction to Data Communications**

Probability and Stochastic Processes. Elements of a digital communication system and information theory. Channel models and capacity. Representation of Bandpass signals and systems. Representation of finite energy signals by orthonormal expansions. Representation and spectral characteristics of digitally modulated signals. Characterization of the signal waveforms. Optimum demodulation for completely known signals and signals with random phase in additive Gaussian noise. Carrier and symbol synchronization.

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**Electrical Engineering 677** H(3-1)


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**Advanced Data Communications**

Efficient signaling with coded waveforms. Linear block codes. Convolutional codes. Trellis coded modulation and Ungerboeck codes. Digital signaling over a bandwidth constrained linear filter channel. Signal design for bandlimited channels. Linear equalization. Decision feedback equalization. Maximum likelihood sequence estimation for ISI corrupted signals. Digital signaling over fading multipath channels. Binary signaling over a frequency nonselective slowly fading channel. Diversity techniques for fading multipath channels. Spread spectrum signals for digital communications. Direct sequence and frequency hopped spread spectrum signals.

**Electrical Engineering 685** H(3-1)

**Digital Control Systems**

Analysis and design of sampled-data control systems. Basic concepts of linear discrete-time systems. Norms of signal and systems. State-space models. Discretization of analog systems. Parametrization of all stabilizing controllers. Properties of sampling and hold operations. Stability and tracking in sampled-data systems. Digital design by fast discretization. Modern techniques for optimal control synthesis.

**Electrical Engineering 687** H(3-1)

**Switch Mode Power Converters**

Design and analysis of dc-to-dc and ac-to-ac single-phase power converters. Device characteristics. Dc-to-dc topologies, dc-to-ac topologies and ac-to-ac topologies. Linearized models. Classical feedback control; introduction to state-space analysis methods. Input harmonic analysis, output harmonic analysis, and techniques to obtain unity input power factory.

**Electrical Engineering 697** H(3-1)

**Digital Image Processing**

Image formation and visual perceptual processing. Digital image representation. Two dimensional Fourier transform analysis. Image enhancement and restoration. Image reconstruction from projections. Image coding for data compression and transmission. Introduction to image understanding and computer vision.

**Electrical Engineering 698** F(0-4)

**Graduate Project**

Individual project in the student's area of specialization under the guidance of the student's supervisor. A written proposal, one or more written progress reports, and a final written report are required. An oral presentation is required upon completion of the course. Open only to students in the MEng Courses Only Route.

**Electrical Engineering 699** H(3-1)

**Multidimensional Signal Processing**

Characterization of multidimensional (MD) signals, the MD Laplace, Fourier and Z transforms. Practical analog and digital signals and their MD energy density spectra. Aliasing, convolution, boundary conditions, causality, and stability in MD. Characterization of linear shift-invariant systems using MD transform transfer functions. State variable representations of MD systems. Elementary decompositions of MD transfer functions and bounded-input bounded-output stability. Design and implementation of MD digital filters. Applications of MD signal processing in engineering systems. Two- and three-dimensional digital signal processing in seismic, sonar, imaging and broadcast television.

**Energy and the Environment** **ENEV**

Instruction offered by members of the Faculties of Engineering, Environmental Design, Law and the Haskayne School of Business.

**Note:** The following courses are taught only in Quito, Ecuador and enrollment is limited to students admitted to the MSc in Energy and the Environment program, or approved by the OLADE Project Director.

**Graduate Courses**

**Energy and the Environment 601** H(3-0)

**Energy Systems I: Non-Renewable Energy**

Explore the interaction between non-renewable resources (petroleum, natural gas, coal, thermal stations, hydro) and the environment. Consider the technical and environmental aspects within the energy and environment cycle for evaluation and management.

**Energy and the Environment 603** H(3-0)

**Energy Systems II: Renewable Energy**

Study renewable energy sources as prospective energy suppliers for the future, along with conditions for sustained implementation of renewable energy technologies (biomass, solar, wind, geothermal, co-generation).

**Energy and the Environment 605** H(3-0)

**Ecology and Environmental Chemistry**

Chemical concepts and processes for understanding and managing air, water and earth ecological systems.

**Energy and the Environment 607** H(3-0)

**Water Pollution and its Impact on the Energy Sector**

Causes and consequences of water pollution and management practices and technologies for prevention, mitigation and control of pollutant effluents.

**Energy and the Environment 609** H(3-0)

**Air Pollution and its Impact on the Energy Sector**

Causes and consequences of air pollution and management practices and technologies for prevention, mitigation and control of pollutant emissions.

**Energy and the Environment 611** H(3-0)

**Land Pollution and Waste Management in the Energy Sector**

Causes and consequences of land pollution and management practices and technologies for prevention, mitigation and control of pollution. Waste management principles and effective practices.

**Energy and the Environment 613** H(3-0)

**Energy Systems III: Planning and Energy Economics**

Financial principles and evaluation techniques and their application to energy investment planning and to assessment of energy conservation opportunities and policies.

**Energy and the Environment 615** H(3-0)

**Environmental Impact Assessment in the Energy Sector**

Techniques, principles and practices for environmental impact assessment, with application to energy development projects.

**Energy and the Environment 617** H(3-0)

**Human Resource and Management in the Energy Sector**

The major concepts and theories of management and organizational dynamics as they impact on the energy sector: interpersonal effectiveness and self

awareness, motivation, group dynamics, project teams, supportive communication, stress, leadership, power, influence and conflict, organizational culture, processes of change. An application, skill development, managerial issues, and workplace trends focus.

**Energy and the Environment 619** H(3-0)

**Environmental Law in the Energy Sector**

Legal systems, nature and sources; international environmental law and its implementation; fundamental legal concepts including jurisdiction, procedural fairness, liability, property and contract; environmental regulatory systems and alternative instruments; judicial review; enforcement and compliance; non-judicial dispute resolution.

**Energy and the Environment 621** H(3-0)

**Environmental Management Tools in the Energy Sector**

Environmental management tools including strategic policies; structures; impact and production assessment; audits; indicators and reporting; life cycle assessment; risk management; and economic instruments.

**Energy and the Environment 623** H(3-0)

**Strategic Environmental Planning for Energy Organizations**

A strategic approach to managing environmental and social issues facing energy organizations and its economic rationale in a competitive global market place.

**Energy and the Environment 625** H(3-0)

**Interdisciplinary Team Project**

An environmental situation or issue which students are expected to research and prepare a plan to address.

**Energy and the Environment 627** H(3-0)

**Major Project**

Completion and presentation of an individual project that is related to an environmental issue or problem faced by the sponsoring energy enterprise or government department in the country that the participant comes from. Participants in the Master's program will define the project in advance of the fourteen months program and will work on the major project throughout the fourteen months of the program.

**Energy and the Environment 629** H(3-0)

**Advanced Seminars**

**MAY BE REPEATED FOR CREDIT  
NOT INCLUDED IN GPA**

**Energy and the Environment 631** H(3-0)

**Introduction to Energy and the Environment in Latin America**

Introduction to energy project management in the Latin American and Caribbean (LAC) regions with a focus on sustainable development and environmental management strategies.

**Prerequisite:** Consent of the Program Director.

**Energy and the Environment 699 H(3-0)****Topics in Energy and the Environment**

Intensive study of selected topics in energy and the environment and related subjects. Course will reflect changing content needs and faculty interests.

**Prerequisite:** Consent of the Program Director.

**MAY BE REPEATED FOR CREDIT**

**Engineering****ENGG**

Instruction offered by members of the Faculty of Engineering.

Associate Dean (Academic & Planning) – R.L. Day

**Junior Courses****Engineering 201 H(3-1.5T-3/2)****Behaviour of Liquids, Gases and Solids**

An introduction to the behaviour of fluids and solids; phase transformations, the phase rule and phase diagrams. Ideal and real gases; equations of state and their engineering applications; simple kinetic theory; transport properties of fluids. Liquid state; vapor pressure; shear behaviour; flow of fluids in pipelines. Solids; crystalline and non-crystalline structure; non equilibrium solid phases; electrical and thermal conductivity; dislocations; stress and strain; creep; fracture.

**Engineering 205 H(3-1.5T)****Engineering Mechanics I**

Statics: Force vectors; equilibrium of particles in two and three dimensions; force system resultants; equilibrium of a rigid body in two and three dimensions; trusses; frames, machines and beams. Dynamics: Kinematics and kinetics of particles.

**Note:** Not open to students with credit in Engineering 203.

**Engineering 209 H(3-1T)  
(Economics 209)****Engineering Economics**

The basic tools and methodology of engineering economic studies. Topics include investment decisions, theory of replacement, economics of scale, externalities, social decision making and government regulation. Examples are drawn from engineering projects.

**Prerequisite:** Registration in the Faculty of Engineering with second-year standing or higher. If not registered in the Faculty of Engineering, consent of the Department of Economics.

**Engineering 233 H(3-2)****Computing for Engineers I**

Overview of computer systems. Functions of software components: operating systems, editors, compilers. Programming in a high-level language: selection and loop structures, routines, array and record types, text file operations. Introduction to object-based programming: use of class libraries and construction of simple classes.

**Engineering 251 H(1-4.5)****Design and Communication I**

The principles of engineering design, engineering graphics and written communication learned within a hands-on project-based experience for engineering

students. Safety in the laboratory; working in a team environment; core skills for engineering students; process of engineering design; graphical communication: theory of projection, multiview representation, descriptive geometry, sketching, information for manufacturing; written communication: style, format, organization, preparation and presentation skills. Real-life examples of design and engineering practice across all disciplines. Core competencies will be learned primarily within the context of team-based design projects.

**Note:** Not open to students with credit in Engineering 215.

**Engineering 253 H(1-4.5)****Design and Communication II**

A continuation of Engineering 251. Students will perform more advanced team-based projects that integrate mathematical, scientific and engineering knowledge and skills. Issues that play critical roles in engineering design will be introduced, such as project management, societal and environmental awareness, health and safety, design for safety, sustainable development, information access.

**Prerequisite:** Engineering 251.

**Senior Courses****Engineering 311 H(3-1.5T-3/2)****Engineering Thermodynamics**

Thermodynamic systems, properties and state, energy, temperature and the zeroth law, equilibrium, properties of the pure substance, equations of state. Work, reversibility, heat, first law, specific heats, enthalpy, ideal gas, flow systems. Entropy and the second law, Carnot cycle, thermodynamic temperature scale, process equations, cycles, process efficiencies, calculation of entropy change.

**Prerequisites:** Engineering 201 and Applied Mathematics 217.

**Engineering 317 H(3-1.5T-3/2)****Mechanics of Solids**

Axial-force, shear-force and bending moment diagrams; stress and strain; stress-strain relations; elastic and plastic behaviour; elastic constants; simple statically indeterminate (one-degree) problems; review of moment of inertia, product of inertia and principal axes of inertia; elastic torsion of circular shafts; elastic and plastic bending about principal axes of beams with symmetrical cross-section; composite beams; shear stresses due to bending; Mohr's circle for stress; thin-walled pressure vessels; deflection of beams by integration; Euler buckling.

**Prerequisites:** Engineering 205 (or 203) and Applied Mathematics 217.

**Engineering 319 H(3-1.5T)****Probability and Statistics for Engineers**

Presentation and description of data, introduction to probability theory, Bayes theorem, discrete and continuous probability distributions, estimation, sampling distributions, tests of hypotheses on means, variances and proportions, simple linear regression and correlation. Applications are chosen from engineering practice.

**Prerequisite:** Applied Mathematics 219.

**Note:** Credit towards degree requirements will be given for only one of Anthropology 307, Applied Psychology 301/303, Engineering 319, Political Science 399, Psychology 312, Sociology 311, Statistics 201/211, 213/217, 333, 357; that one being a course(s) appropriate to the particular degree program.

**Engineering 325 H(3-1T-3/2)****Electric Circuits and Systems**

Topics in electric circuits and electric systems related to engineering theory and practice in the areas of Chemical, Civil, Geomatics, Mechanical and Manufacturing Engineering.

**Prerequisite:** Physics 259.

**Engineering 335 H(3-2)****Computing for Engineers II**

Pointers and references, memory models and memory management. Abstract data types (ADTs); implementation of ADTs as classes. Introduction to object-oriented programming: inheritance and polymorphism. Introduction to recursion. Aspects of floating-point computation

**Prerequisite:** Engineering 233.

**Engineering 349 H(3-1.5T)****Engineering Mechanics II**

Review of Mechanics I fundamentals. Mass Centre, moments of inertia; composite bodies. Kinematics and kinetics of rigid bodies. Work and energy principles. Friction and work of friction. Conservative systems. Impulse and momentum.

**Prerequisites:** Engineering 205, Applied Mathematics 217 and 219.

**Engineering 391 Q(1.5-0)****Advanced Topics I**

Advanced topics in engineering science and design. Registration in the course requires approval of the Associate Dean (Academic & Planning), Faculty of Engineering.

**MAY BE REPEATED FOR CREDIT**

**Engineering 393 H(3-0)****Advanced Topics II**

Advanced topics in engineering science and design. Registration in the course requires approval of the Associate Dean (Academic & Planning), Faculty of Engineering.

**MAY BE REPEATED FOR CREDIT**

**Engineering 407 H(3-2)****Numerical Methods in Engineering**

The theory and use of numerical computational procedures to solve engineering problems. Methods for: solution of nonlinear equations, solution of simultaneous linear equations, curve fitting, solution of the algebraic eigenvalue problem, interpolation, differentiation, integration, solution of ordinary differential equations and solution of partial differential equations are included. The laboratory includes the application to elementary problems and the computer solution of comprehensive engineering problems.

**Prerequisite:** Engineering 233 and Applied Mathematics 307.

**Engineering 481 H(3-1.5S)****Technology and Society**

An interpretive course on the interrelationship between technology and society. The first part of the course surveys significant historical developments within disciplinary areas such as energy, materials, production processes, structures, transport, communications, and computation. Sequence within

each area: discovery, development, application, impact, future. Social and economic consequences are also considered. The latter part of the course explores contemporary problems of society and technology.

**Note:** Available to students registered in other faculties as well as third-year or fourth-year Engineering students. This course does not presuppose any formal background in Engineering or Science.

**Engineering 513** **H(3-0)**

### *The Role and Responsibilities of the Professional Engineer in Society*

The professional duties and responsibilities of the engineer as they relate to society. Ethics and the engineering profession. Public and worker safety and health. Design for safety. Sustainable development. The engineer and the environment. Environmental stewardship. Essentials of leadership. Gender issues. Employment equity. Fundamentals of Engineering Law. Professional organizations. The Engineering Professions Act.

### Graduate Courses

**Engineering 683** **H(3-0)**

### *Special Problems in Environmental Engineering*

Designed to provide graduate students with the opportunity of pursuing advanced studies in Engineering for the Environment under the direction of one or more faculty members. Students will be required to consider problems of an advanced nature.

**Engineering 685** **H(0-5)**

### *Research Project in Environmental Engineering*

Designed to provide individual students or small groups of students, possibly with different backgrounds, with the opportunity to work on a research project under the supervision of one or more faculty members. Industrial representatives may assist in the selection of suitable research projects and actively participate as advisors. A written proposal, one or more progress reports, and a final report are required. Open only to students in the MEng (Courses Only) route.

## English

## ENGL

Instruction offered by members of the Department of English in the Faculty of Humanities.

Department Head – M. McGillivray

One full-course equivalent of English and/or Comparative Literature will normally constitute the prerequisite for 300-level English courses.

The following 300-level courses have no 200-level prerequisites: English 329, 385, 387, 389, 393, 395, 399.

Students may not receive credit for more than one full-course equivalent of 200-level English. The only exception is when English 240 is taken after another 200-level English course or courses in which case the student may receive credit for up to two full-course equivalents in 200-level English.

Students with credit in senior English courses that have prerequisites may not normally take 200-level English courses, except English 240.

### Junior Courses

**English 202** **F(3-1T)**

### *Reading and Writing about Literature*

Selected works of poetry, fiction and drama (other genres may be included), with instruction in critical writing.

**Note:** Students with credit in any 200-level English course may not register in English 202.

**English 231** **H(3-1T)**

### *Introduction to Fiction*

Selected novels and short stories, with instruction in critical writing.

**Note:** Open to students with credit in no more than one half-course equivalent of 200-level English.

**English 233** **H(3-1T)**

### *Introduction to Non-Fictional Prose*

Selected works of non-fictional prose, with instruction in critical writing.

**Note:** Open to students with credit in no more than one half-course equivalent of 200-level English.

**English 235** **H(3-1T)**

### *Introduction to Poetry*

Selected poetry, with instruction in critical writing.

**Note:** Open to students with credit in no more than one half-course equivalent of 200-level English.

**English 237** **H(3-1T)**

### *Introduction to Dramatic Literature*

Selected plays, with instruction in critical writing.

**Note:** Open to students with credit in no more than one half-course equivalent of 200-level English.

**English 239** **H(3-1T)**

### *Introduction to Literary Studies*

Emphasizes fundamental skills: how to read a text accurately and critically; how to write logically, clearly, and correctly; how to listen and speak in a formal discussion.

**Note:** Open to students with credit in no more than one half-course equivalent of 200-level English.

**Note:** Instructors will offer a variety of course designs and reading lists to teach these skills: check the description of each section posted on the English Department Web site.

**English 240** **F(3-1T)**  
**(formerly English 200)**

### *Literature in English from the Middle Ages to the Present*

A historical survey, with instruction in critical writing.

**Note:** Open to students with credit in no more than one full-course equivalent in English at the 200 level. Compulsory for English Majors, Minors and Honours students.

### Senior Courses

**English 302** **F(3-0)**

### *Introduction to Contemporary Theoretical Practices*

An examination of the claims and assumptions of a range of contemporary critical practices, such as formalism, structuralism, deconstruction, feminism and gender studies, new historicism, psychoanalytic criticism, and cultural and ideological critique. Includes practice in the application of theory to literary texts.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**Note:** Not open to students with credit in English 301.

**Note:** Compulsory for English Majors, Minors and Honours students.

**English 312** **F(3-0)**

### *Shakespeare*

A consideration of the development and variety of Shakespeare's dramatic art.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**English 318** **F(3-0)**

### *Women's Literary Tradition*

The writings of women in English from the medieval period to the present, with emphasis on the evolution of a complex and varied literary tradition.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**English 329** **H(3-0)**

### *Reading Poetry*

Practice in the close reading of poems. The poetry chosen will emphasize the nineteenth and twentieth centuries.

**Note:** Not open to students with credit in English 354. Does not require any prerequisite.

**English 354** **F(3-0)**

### *Poetry: Reading and Analysis*

A study of the major forms, modes, and techniques of poetry written in English, through textual analysis and close reading. Detailed attention to tropes and figures, form, tone, diction, implication, point of view.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**Note:** Compulsory for English Majors, Minors and Honours students.

**English 356** **F(3-0)**

### *Drama*

A survey of dramatic literature in English from its medieval origins to the present.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**English 358** **F(3-0)**

### *Fiction*

The development of prose fictional forms, including the novel and the short story, from the eighteenth century to the present.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**English 364** F(1-2S-1T)**Poetry Writing I**

Basic instruction in writing poetry, with particular emphasis on the short lyric poem.

**Prerequisites:** Full junior English or equivalent and consent of the Department.

**Note:** One month before the start of classes, prospective students must submit a portfolio of their own work for evaluation before consent of the Department will be given. Details of this procedure are available from the Department of English. (This course is ideal preparation for English 494.)

**English 366** F(1-2S-1T)**Fiction Writing I**

Basic instruction in the art of fiction writing, with particular emphasis on the short story.

**Prerequisites:** Full junior English or equivalent and consent of the Department.

**Note:** One month before the start of classes, prospective students must submit a portfolio of their own work for evaluation before consent of the Department will be given. Details of this procedure are available from the Department of English. (This course is ideal preparation for English 496.)

**English 370** F(3-0)**Canadian Literature**

A survey of Canadian literature from the beginnings to the present. The course will include representative works of such writers as Haliburton, Moodie, the Confederation poets, Crawford, Leacock, Grove, Mitchell, Wilson, MacLennan, Laurence, Richler, Munro, Birney and Atwood.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**Note:** Not open to students with credit in English 470.

**Note:** For courses in French-Canadian Literature refer to the Department of French, Italian and Spanish.

**English 381 (Linguistics 381)** H(3-0)**The History of English**

An introduction to important changes and stages in the history of English including its Indo-European and Germanic origins and a consideration of Modern English grammar and orthography from a historical perspective.

**Prerequisites:** Linguistics 201/203 or 205/207.

**English 383** H(3-0)**Topic in Literature and the Environment**

**Note:** English 383 does not require any prerequisite.

**Note:** Not open to students with credit in English 387.03 or 387.30.

**MAY BE REPEATED FOR CREDIT**

**English 385** H(3-0)**Topic in Aboriginal Literatures**

**Note:** English 385 does not require any prerequisite.

**MAY BE REPEATED FOR CREDIT**

**English 387** H(3-0)**Topic in Literature and Society**

**Note:** English 387 does not require any prerequisite.

**MAY BE REPEATED FOR CREDIT**

**English 389** H(3-0)**Topic in Gay or Lesbian Literature**

**Note:** English 389 does not require any prerequisite.

**MAY BE REPEATED FOR CREDIT**

**English 392** F(3-0)**International English Literature**

Literatures written in English outside of Canada, Great Britain, and the United States, encompassing representative works from several areas such as Africa, Australasia, the Caribbean, and the Indian subcontinent.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**Note:** Not open to students with credit in English 492.

**English 393** H(3-0)**Speculative Fiction I: Science Fiction**

An examination of works of science fiction.

**Note:** English 393 does not require any prerequisite.

**English 395** H(3-0)**Speculative Fiction II: Fantasy**

An examination of works of fantasy.

**Note:** English 395 does not require any prerequisite.

**English 397** H(3-0)**Literature for Younger Children**

A historical and critical study of literature for younger children.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**English 398** F(3-0)**Children's Literature**

A historical and critical study of children's literature.

**Prerequisite:** One full-course equivalent of English and/or Comparative Literature, or consent of the Department.

**English 399** H(3-0)**Detective Fiction**

An examination of detective fiction.

**Note:** English 399 does not require any prerequisite.

**English 401** H(3-0)**Old English Language and Prose Literature**

Study of the language of the Anglo-Saxons through reading of prose texts.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 403** H(3-0)**Old English Poetry**

Reading and analysis of Old English poetry in the original language.

**Prerequisite:** English 401 or consent of the

Department.

**English 404** F(3-0)**Middle English Literature**

Representative works of the Middle English period; the Middle English language.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 408** F(3-0)**Sixteenth-Century Literature**

Survey of the literature of the Renaissance to 1600.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 414** F(3-0)**Seventeenth Century Literature**

Survey of the literature of the Renaissance from 1600, including Milton.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 430** F(3-0)**Restoration and Eighteenth Century Literature**

Survey of literature from 1660 to 1800.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 440** F(3-0)**Literature of the Romantic Period**

Survey of literature of the Romantic period.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 444** F(3-0)**Victorian Literature**

Survey of British literature of the later nineteenth century.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 446** F(3-0)**American Literature to 1900**

Survey of American literature to 1900, with emphasis on the nineteenth century.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 450** F(3-0)**British Literature from 1900**

Survey of British literature from 1900 to the present.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 462** F(3-0)**American Literature from 1900**

Survey of American literature from 1900 to the present.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 470** F(3-0)**Canadian Literature**

Survey of Canadian literature from the beginnings to the present.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**Note:** Not open to students with credit in English 370.

**English 480** **F(3-0)**

**Literary Theory**

Survey of the major theories of and approaches to literature from classical times to the present.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**English 492** **F(3-0)**

**International Literature**

Literatures written in English outside of Great Britain, the United States, and Canada, with works from several areas such as Africa, Australasia, the Caribbean, and the Indian subcontinent.

**Prerequisites:** English 354 and one of 301 or 302, or consent of the Department.

**Note:** Not open to students with credit in English 392.

**English 494** **F(2-1T-1)**

**Poetry Writing II**

A close examination and discussion of the student's own work, with emphasis on technique.

**Prerequisites:** Full junior English or equivalent and consent of the Department.

**Note:** One month before the start of classes, prospective students must submit a portfolio of their own work for evaluation before consent of the Department will be given. Details of this procedure are available from the Department of English.

**English 496** **F(2-1T-1)**

**Fiction Writing II**

A close examination and discussion of the student's own work, with emphasis on technique.

**Prerequisites:** Full junior English or equivalent and consent of the Department.

**Note:** One month before the start of classes, prospective students must submit a portfolio of their own work for evaluation before consent of the Department will be given. Details of this procedure are available from the Department of English.

**English 501** **H(3-0)**

**Studies in Drama**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 503** **H(3-0)**

**Studies in Fiction or Non-Fictional Prose**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 504** **F(2S-2T)**

**Honours Project**

**Note:** Normally restricted to English Honours students. Students must consult with the English Department for information and advice by March of

the year in which they plan to register in English 504.

**English 505** **H(3-0)**

**Studies in Poetry**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 507** **H(3-0)**

**Studies in British Literature**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 509** **H(3-0)**

**Studies in Canadian Literature**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 510** **F(3-0)**

**Advanced Textual Studies**

**Prerequisites:** One full-course equivalent in English at the 400 level and consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 511** **H(3-0)**

**Studies in American Literature**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 513** **H(3-0)**

**Studies in International Literatures in English**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 517** **H(3-0)**

**Theoretical and Cultural Studies**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 519** **H(3-0)**

**Studies in a Literary Period**

**Prerequisite:** One full-course equivalent in English at the 400 level, or consent of the Department.

**MAY BE REPEATED FOR CREDIT**

**English 521** **Q(1.5-0)**

**Senior Workshop**

**Prerequisite:** Consent of the Department.

**English 598** **F(2-1T-1)**

**The Book-Length Manuscript**

A close examination and discussion of the student's own work, with emphasis on advanced technique.

**Prerequisites:** English 364, 366, 494, and/or 496 or equivalent and consent of the Department.

**Note:** This course is double-numbered with English 698 (which will have separate and more strenuous student expectations). A student may take English

598 as an undergraduate student and 698 as a graduate student in English.

**Note:** One month before the start of classes, prospective students must submit a portfolio of their own work for evaluation before consent of the Department will be given. Details of this procedure are available from the Department of English.

**MAY BE REPEATED FOR CREDIT**

**Graduate Courses**

**English 603** **H(3-0)**

**Studies in Genre**

**MAY BE REPEATED FOR CREDIT**

**English 605** **H(3-0)**

**Studies in National or International Literatures**

**MAY BE REPEATED FOR CREDIT**

**English 607** **H(3-0)**

**Theoretical and Cultural Studies**

**MAY BE REPEATED FOR CREDIT**

**English 609** **H(3-0)**

**Studies in a Literary Period**

**MAY BE REPEATED FOR CREDIT**

**English 612** **F(3-0)**

**Studies in Medieval and Renaissance Literature**

**MAY BE REPEATED FOR CREDIT**

**English 618** **F(3-0)**

**Studies in Restoration and Eighteenth-Century Literature**

**MAY BE REPEATED FOR CREDIT**

**English 620** **F(3-0)**

**Studies in Romantic Literature**

**MAY BE REPEATED FOR CREDIT**

**English 622** **F(3-0)**

**Studies in Nineteenth-Century Literature**

**MAY BE REPEATED FOR CREDIT**

**English 624** **F(3-0)**

**Studies in Modern Literature**

**MAY BE REPEATED FOR CREDIT**

**English 670** **F(3-0)**

**Studies in American Literature**

**MAY BE REPEATED FOR CREDIT**

**English 676** **F(3-0)**

**Studies in Canadian Literature**

## MAY BE REPEATED FOR CREDIT

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**English 680** F(3-0)


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*Studies in Literary Criticism*

## MAY BE REPEATED FOR CREDIT

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**English 684** F(3-0)


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*Special Topics*

## MAY BE REPEATED FOR CREDIT

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**English 696** F(1-0)


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*Studies in Bibliography, Research Methods, and Palaeography*

Required of all graduate students who have not had an equivalent course.

## NOT INCLUDED IN GPA

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**English 698** F(2-1T-1)


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*Studies in Creative Writing*

**Note:** This course is double-numbered with English 598 (which will have separate and less-strenuous student expectations). Though 598 and 698 may not both be counted for graduate credit, a student may take 598 as an undergraduate student and 698 as a graduate student in English.

**Note:** By mid-August, prospective students must submit a portfolio of their own work for evaluation before consent to register for this course will be given. Details of this procedure are available from the Department of English.

## MAY BE REPEATED FOR CREDIT

## English Language Foundation Program ELFP

Admission to English Language Foundation Program courses is restricted to students whose native language is not English. Guidelines for admission to this program can be found in the Academic Regulations section of this Calendar.

**Introductory Courses**


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**English Language Foundation Program 150** F(10-3)


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*Introduction to Writing/Grammar*

Strategies to improve skills in written English. Concentrates on the formation of sentences and on the basic formation of the expository paragraph. Acquisition and use of grammatical structures to improve accuracy in writing English.

**Prerequisite:** Proof of English as a Second Language training with results at low to intermediate

level.

**Corequisites:** English Language Foundation Program 153, 157

**Note:** Not available for credit towards a degree/ diploma program.

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**English Language Foundation Program 153** H(5-1.5)


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*Introduction to Reading*

Strategies for reading and understanding academic texts written in English.

**Prerequisite:** Proof of English as a Second Language training with results at low to intermediate level.

**Corequisites:** English Language Foundation Program 150, 157.

**Note:** Not available for credit towards a degree/ diploma program.

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**English Language Foundation Program 157** H(5-1.5)


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*Introduction to Listening/Speaking*

English language listening and speaking skills needed to function in a Canadian cultural and educational setting.

**Prerequisite:** Proof of English as a Second Language training with results at low to intermediate level.

**Corequisites:** English Language Foundation Program 150, 153.

**Note:** Not available for credit towards a degree/ diploma program.

**Level 1 Courses**


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**English Language Foundation Program 160** F(10-3)


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*Writing English/Grammar 1*

Strategies to improve skills in written English. Concentrates on paragraphs and short essays. Use of grammatical structures to improve accuracy in writing English.

**Prerequisite:** Evidence of Intermediate to Advanced Intermediate English language proficiency.

**Corequisites:** English Language Foundation Program 163, 167.

**Note:** Not available for credit towards a degree/ diploma program.

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**English Language Foundation Program 163** H(5-1.5)


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*Reading English 1*

Strategies for reading and understanding academic texts written in English.

**Prerequisite:** Same as English Language Foundation Program 160.

**Corequisites:** English Language Foundation Program 160, 167.

**Note:** Not available for credit towards a degree/ diploma program.

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**English Language Foundation Program 167**


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H(5-1.5)


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*Listening/Speaking English 1*

English language listening and speaking skills needed in an academic setting.

**Prerequisite:** Same as English Language Foundation Program 160.

**Corequisites:** English Language Foundation Program 160, 163.

**Note:** Not available for credit towards a degree/ diploma program.

**Level 2 Courses**


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**English Language Foundation Program 170** F(10-3)


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*Writing English 2*

Strategies for writing essays and research papers in English. A continuation of English Language Foundation Program 160. Includes techniques for researching topics, organizing ideas, revising and editing written work, self-evaluation and peer review/ discussion.

**Prerequisite:** Advanced-intermediate English language proficiency as demonstrated by one of the following: (1) Successful completion of English Language Foundation Program 160, 163, and 167; or (2) Entrance Level II performance on the English Language Foundation Program assessment.

**Corequisites:** English Language Foundation Program 173, 177.

**Note:** Not available for credit towards a degree/ diploma program. Students may take one credit half course, upon approval, while enrolled in Level 2.

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**English Language Foundation Program 173** H(5-1.5)


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*Reading English 2*

A continuation of English Language Foundation Program 163. Provides strategies for increasing vocabulary and reading speed. Develops skills in recognizing textual patterns, drawing conclusions, and making inferences.

**Prerequisite:** Same as English Language Foundation Program 170.

**Corequisites:** English Language Foundation Program 170, 177.

**Note:** Not available for credit towards a degree/ diploma program. Students may take one credit half course, upon approval, while enrolled in Level 2.

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**English Language Foundation Program 177** H(5-1.5)


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*Listening /Speaking English 2*

A continuation of English Language Foundation Program 167. Concentrates on discussion and oral presentation skills.

**Prerequisite:** Same as English Language Foundation Program 170.

**Corequisites:** English Language Foundation Program 170, 173.

**Note:** Not available for credit towards a degree/ diploma program. Students may take one credit half course, upon approval, while enrolled in Level 2.



## Level 3 Courses

### English Language Foundation Program 180 F(10-3)

#### Writing English 3

Writing focuses on developing research skills and perfecting essay writing.

**Prerequisite:** Advanced English language proficiency as demonstrated by one of the following: (1) Successful completion of English Language Foundation Program 170, 173 and 177; or (2) Entrance Level III performance on the English Language Foundation Program assessment.

**Corequisites:** English Language Foundation Program 183, 187.

**Note:** Not available for credit towards a degree/diploma program. Students may take one credit half course, upon approval, while enrolled in Level 3.

### English Language Foundation Program 183 H(5-1.5)

#### Reading English 3

A continuation of English Language Foundation Program 173. Students select texts based upon individual interests.

**Prerequisite:** Same as English Language Foundation Program 180.

**Corequisites:** English Language Foundation Program 180, 187.

**Note:** Not available for credit towards a degree/diploma program. Students may take one credit half course, upon approval, while enrolled in Level 3.

### English Language Foundation Program 187 H(5-1.5)

#### Listening/Speaking English 3

Unites speaking, listening, and reading by discussion in a seminar format based upon texts selected by students.

**Prerequisite:** Same as English Language Foundation Program 180.

**Corequisites:** English Language Foundation Program 180, 183.

**Note:** Not available for credit towards a degree/diploma program. Students may take one credit half course, upon approval, while enrolled in Level 3.

## Entrepreneurship and Innovation **ENTI**

Instruction offered by members of the Haskayne School of Business.

Entrepreneurship and Innovation Chairperson – L. Donlevy

**Note:** Students have the opportunity to take courses offered by the Haskayne School of Business without the stated prerequisites, with the written permission of the Associate Dean (Undergraduate Programs) as appropriate, upon the recommendation of the Instructor of the course. However, should a student fail to achieve satisfactory standing in any course for which the stated prerequisite(s) is (are) lacking, he/she may be required to successfully complete the stated prerequisite(s) prior to being permitted to repeat the course. Students are required to have consent of the Haskayne School of Business Office before registering in 600-level courses offered by the Haskayne School of Business.

## Junior Course

### Entrepreneurship and Innovation 201 (formerly Venture Development 201) H(3-2)

#### Introduction to Business Venturing

Introduces students to the various management disciplines from the perspective of creating a new business venture. The primary learning methodology is through a project in which students identify a business opportunity, research the opportunity, write a business plan for the business and present the plan in class.

**Note:** This course is not available for credit towards the Bachelor of Commerce or Minor in Management and Society.

## Senior Courses

### Entrepreneurship and Innovation 381 (formerly Venture Development 381) H(3-0)

#### Principles of Entrepreneurship

Overview of the process of entrepreneurship with focus on the role of the entrepreneur in new venture initiative and development. Application of knowledge of the processes involved in idea generation and evaluation ending in the technical, market, financial and human resource feasibility of a concept.

**Prerequisite:** Second year standing or Entrepreneurship and Innovation 201 or consent of the business school.

### Entrepreneurship and Innovation 401 (formerly Venture Development 401) H(3-0)

#### Opportunity Identification

Application of knowledge of the processes involved in idea generation and evaluation ending in the technical, market, financial and human resource feasibility of a concept. Critical literature will be reviewed as it applies to the early stages of concept development and evaluation.

**Prerequisites:** Third year standing and Entrepreneurship and Innovation 201 or 381 or consent of the business school.

### Entrepreneurship and Innovation 403 (formerly Venture Development 403) H(3-0)

#### New Venture Planning

A project based course in developing and writing a business plan for an existing and/or growth oriented venture. Focus will be given to the content, form and uses of a formal business plan.

**Prerequisites:** Third year standing and Entrepreneurship and Innovation 201 or 381 or consent of the business school.

### Entrepreneurship and Innovation 405 (formerly Venture Development 405) H(3-0)

#### New Venture Start-Up

Application of the strategies and tactics for the creation and growth of potential new ventures. Students will address key questions in bringing together critical resources to launch a venture, review important empirical research in the field and participate in project work.

**Prerequisites:** Third year standing and Entrepreneurship and Innovation 201 or 381 or consent of the business school.

### Entrepreneurship and Innovation 499 H(3-0)

#### Family Business Management

Explores the functions, issues, operations, and dynamics of family businesses. Topics include, but

are not limited to the strengths and weaknesses of family businesses, managing family business conflict, management succession, professionalization, and strategic planning. The pedagogy of the course relies on field projects, discussions of readings and cases, and guest speakers.

**Prerequisite:** Third year standing.

**Note:** Credit for both Entrepreneurship and Innovation 499 and Strategy and General Management 559.09 will not be allowed.

### Entrepreneurship and Innovation 559 (formerly Venture Development 559) H(3-0)

#### Selected Topics in Entrepreneurship and Innovation

Investigation of selected topics related to entrepreneurship, venture development and family business, emphasizing the practical application of theory and principles to actual business situations and venture opportunities.

**Prerequisite:** Third year standing.

#### MAY BE REPEATED FOR CREDIT

## Graduate Courses

### Entrepreneurship and Innovation 781 (formerly Venture Development 781) H(3-0)

#### Introduction to Entrepreneurship

An experience based course covering the prestart-up stage of business development through group projects and case studies designed to provide experience based skill development in creativity, idea generation, and feasibility analysis.

**Note:** Credit for both Entrepreneurship and Innovation 781 and Human Resources and Organizational Dynamics 781 will not be allowed.

### Entrepreneurship and Innovation 783 (formerly Venture Development 783) H(3-1)

#### Opportunity Development

A project and case based course designed to explore concepts of opportunity development.

**Prerequisite:** Entrepreneurship and Innovation 781

**Note:** Credit for both Entrepreneurship and Innovation 783 and Policy and Environment 783 will not be allowed.

### Entrepreneurship and Innovation 785 H(3-0)

#### Venture Development

A project based course designed around the formation of business concepts in the formalization of a business plan.

**Prerequisite:** Entrepreneurship and Innovation 781 or consent of the business school.

**Note:** Credit for both Entrepreneurship and Innovation 785 and Management Studies 797.81 will not be allowed.

### Entrepreneurship and Innovation 787 (formerly Venture Development 787) H(3-0)

#### Applied Business Analysis

Approaches to advising new and existing ventures on effective venture development. Projects will involve the student conducting analysis of several ventures and providing advice to them.

**Prerequisite:** Marketing 601 or 661 or consent of the business school.

Entrepreneurship and Innovation 797 H(3S-0)  
(formerly Venture Development 797)

*Advanced Seminar in Venture Development*

Prerequisite: Consent of the business school.

**MAY BE REPEATED FOR CREDIT**

Entrepreneurship and Innovation 799 H(3S-0)  
(formerly Venture Development 799)

*Doctoral Seminars in Venture Development*

799.01. Entrepreneurship: The State of the Art

799.02. Conceptual Models and Theories of New Venture Development

799.03. Special Topics in Entrepreneurship and Innovation

799.04. Advanced Topics in Entrepreneurship

## Environmental Design EVDS

The following list of courses, offered by members of the Faculty of Environmental Design and members of other departments in the University, is specific to the 2003-2004 academic year.

Students are advised that some of the courses listed below may not be offered in 2003-2004 if special circumstances require that they be dropped.

Students should consult with their Faculty advisor before registering for any course.

**Core Courses in Environmental Design are:**

Environmental Design 604. Conceptual Bases of Environmental Design

Environmental Design 609. Environmental Design Practice

Environmental Design 701. Advanced Environmental Design Practice

Environmental Design 702. Advanced Environmental Design Practice

Environmental Design 711. Theoretical Basis for Interdisciplinary Intervention and Design.

### Senior Courses

Environmental Design 533 H(3-0)

*Introduction to Industrial Design*

Historic and conceptual frameworks of industrial design; principles of ergonomics, materials and industrial production technologies; industrial design as technique and creative process; professional perspectives. Lectures and field work. Environmental Design 533 is a prerequisite or corequisite to Industrial Design studio courses.

Environmental Design 583 H(1.5-1.5T)

*Special Topics in Environmental Design*

Topics in architecture, environmental science, industrial design and planning.

**MAY BE REPEATED FOR CREDIT**

Environmental Design 597 Q(1.5-1.5T)

*Special Topics in Environmental Design*

Topics in architecture, environmental science, industrial design and planning.

**MAY BE REPEATED FOR CREDIT**

### Graduate Courses

Environmental Design 603 H(4-2)

*Introduction to the Professional Practice of Environmental Science*

Study of the nature of environmental science and its professional practice. Examples will be drawn from a broad range of professional activities. The course will examine problems of project definition, design, scoping and budgeting; preparation of proposals for research and consultations.

**Note:** Normally open only to students in Environmental Design degree programs.

Environmental Design 604 F(4.5-0)

*Conceptual Bases of Environmental Design*

Conceptual frameworks for design intervention in the environment based on perspectives from the humanities, natural and social sciences of human relation to natural, social and built environments; theories and models of investigation and intervention; discussion of professional responsibilities and environmental design issues. Required course for all Environmental Design degree program students. Design Camp, for first year students, is part of the Environmental Design 604 core course.

Environmental Design 605 Q(1.5-0)

*Research Methods for Environmental Design*

Overview of methods for developing information required for design intervention in the natural and built environment with emphasis on research techniques from the social sciences. Interdisciplinary perspectives on techniques and their appropriateness for the designer. Roles of research methods in design processes. Practical issues in conducting research.

Environmental Design 609 H(0-8)

*Environmental Design Practice*

Introduction to environmental design encompassing perspectives of architecture, industrial design, urban and regional planning and environmental science; communication and interdisciplinary approaches; environmental design as technique and creative process. Lectures, field and studio work.

**Note:** Open only to students in Environmental Design degree programs and required of all MEDes and MArch degree program students.

**Note:** Graded on CR/C/F basis only.

Environmental Design 615 Q(1-3)  
(formerly Environmental Design Planning 615)

*Introduction to Computer Visualization in Urban Design*

Introduction to computer visualization techniques with emphasis on CAD studio project.

Environmental Design 617 H(3-0)

*Statistical and Empirical Methods in Industrial Design*

A broad interdisciplinary view of methods used to collect and interpret information necessary in the design and development of products. Areas dealt with include but are not limited to user needs and preferences, manufacturing processes and market investigations.

Environmental Design 621 H(3-1)

*Health in the Built Environment*

Concepts of health in an environmental context; historic approaches to preventative medicine; medical basis of building-related illness; case

studies in indoor air quality; strategies for prescription and design of healthy indoor environments.

Environmental Design 623 H(3-0)  
(formerly Environmental Design 683.32)

*Sustainability in the Built Environment*

The principle of sustainability recognizes people as temporary stewards of their environments, working toward a respect for natural systems and a higher quality of life. Examination of the built environment and the tools to achieve a stable and balanced and a regenerative ecosystem in a process of responsible consumption, wherein waste is minimized and the built environment interacts with natural environments and cycles. Healthful interior environments, resource efficiency, ecologically benign materials, renewable energies and social justice issues are examined.

Environmental Design 625 H(3-0)  
(formerly Environmental Design 683.16)

*Environmental Design of Wetlands and Inundated Areas*

Wetland ecology, hydrology and biogeochemical processes will be applied to management issues and design opportunities afforded by wetlands and inundated landscapes. Relationships between land use and water quality lead to consideration of the effects of point source and non-point source pollutants on natural wetlands and receiving water bodies. The effectiveness and limitations of water treatment applications of designed wetlands. Local constructed wetland projects will be used to demonstrate design concepts, regulatory issues and site-specific opportunities. Lectures, student-led seminars and interactive class design study are included.

**Note:** Offered in odd-even dated academic years.

Environmental Design 627 Q(1.5-1.5)

*Computer Literacy in Environmental Design*

Basic computer literacy for Environmental Design students. Introduction to selected software packages of professional relevance to environmental designers.

Environmental Design 629 H(3-0)  
(formerly Environmental Design 721)

*Community Development*

Basic principles and practice of community development. A comprehensive approach to the field and discussion of a wide range of community development perspectives. Topics include community economic development, housing, tourism and cultural development.

Environmental Design 633 H(3S-0)

*Environmental Reserves*

Study of National Parks and equivalent reserves throughout the world, with emphasis on those occurring in North America; an examination of the purposes and functions of such areas in historical, cultural, ecological, legal, and future perspectives; analysis of selected planning and use situations and their related institutional structures.

**Note:** Offered in even-odd dated academic years.

Environmental Design 635 H(3-1.5)

*Computer Applications for Industrial Design*

Introduction to computer applications in Industrial Design, including computer-aided design (CAD), computer graphics, analytical and micro-computer

applications. Conceptual and mathematical bases for two- and three-dimensional computer modeling. Hands-on experience with a range of CAD systems and other computer applications. Discussion of the role of computer systems in design processes.

**Prerequisite:** Mathematics 30 or equivalent.

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**Environmental Design 637** H(3S-0)

**Legal Institutions and the Environment**

Sets the legal context for environmental design. Topics include aspects of the legal process such as the adversary system, doctrine of precedent, elements of the constitution, case analysis and statutory interpretation. Individual rights and remedies will also be considered, as well as jurisprudential questions about the function of law.

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**Environmental Design 639** H(3-1)  
(formerly Environmental Design 683.88)

**Planning Theory**

An introduction to planning theory. Develops a critical awareness of key historical, theoretical, and ethical frameworks; legal, political, and economic institutions; and an understanding of their implications for Canadian planning. An integrative normative procedural approach to planning is presented, one which is appropriate for a pluralistic liberal democratic society.

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**Environmental Design 641** H(3-3)

**Applications of Plant Ecology to Environmental Management**

Fundamental ecological concepts and their applications in Range Management and Forest Management. Range Management section covers such areas as range inventory, classification, assessment, balancing range resource with herd size, productivity and dynamics and various manipulative techniques to improve range productivity. Forest Management section deals with forest use, sustained yield concept, forest and site classification, mensuration, productivity, silviculture, crop rotations, forest planning, conservation and multiple use in forested areas. Weekend field trips to: central Alberta, central British Columbia and the Alberta foothills.

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**Environmental Design 643** H(3-0)

**Ecotourism Planning and Management**

The definition of ecotourism and assessment of cutting-edge trends in the ecotourism marketplace. Specific needs of public-sector planners and park managers, and concerns of local tour operators and tourism service providers. Managing the impacts of tourism, marketing, establishing partnerships, methods for ensuring sustainability, strategies for communities affected by ecotourism and how to orient the ecotourist.

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**Environmental Design 645** H(0-8)

**Site Planning and Design**

Site analysis, landscape potentials and constraints, development factors and criteria are discussed and applied to a human settlement project. Small and large scale projects are compared. Primarily studio project work, with lectures on methods and illustrative examples.

**Prerequisite:** Environmental Design Planning 615 and 633 or equivalent.

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**Environmental Design 647** H(3-0)

**Historic Preservation: Principles and Practice**

Introduction to the concepts, approaches and practice of historic preservation from both an urban planning as well as an architectural perspective. Building conservation, historic districts, historic site development, ecomuseums, commercial area and neighbourhood revitalization are analysed for both public as well as private sector concerns. North American and European case studies are utilized.

**Note:** Offered in odd-even dated academic years.

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**Environmental Design 649** H(3-0)

**Impact Assessment**

Biophysical, economic and social impact assessment will be reviewed in an integrated, interdisciplinary approach which will include lectures, studies of methodologies, theory and practical problems. Federal and various Provincial impact assessment policies and procedures will be considered.

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**Environmental Design 652** F(0-16)

**Basic Industrial Design Studio**

Basic skills in form-giving for mass produced objects. Principles of two- and three-dimensional composition, space and form; the design process. The application of basic design principles to simple problems in industrial design.

**Prerequisite or Corequisite:** Environmental Design 533.

**Note:** Full course offered in single session only.  
**Note:** Open to students in Environmental Design programs and available to students from other faculties with program permission.

**MAY BE REPEATED FOR CREDIT**

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**Environmental Design 653** H(3-0)

**Multimedia for Environmental Design**

Laboratory course allowing students the opportunity to develop an understanding of computer multimedia techniques used to create interactive presentations, educational CD-ROM titles and web documents. The elements covered by the course are: visual (still, video and animation techniques), sound (quality and integration), and the use of web-design software.

**Note:** Not open to students with credit in Environmental Design 683.56 or 697.35.

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**Environmental Design 657** H(3-0)

**Landscape Reclamation**

Introduction to reclamation planning and practice covering such topics as reclamation goal setting, impact prediction, mitigation, materials handling, landscape reconstruction, revegetation, erosion control and industrial decommissioning. The course will focus on large scale developments such as strip mining, industrial plants and linear disturbances. The course is comprised of lectures, a project and student seminars.

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**Environmental Design 659** H(96 hours)

**The Ecology of the Canadian West Coast - A Field Course**

A two-week field course conducted in late Spring to acquaint students with the ecosystems of the Canadian West Coast from the marine intertidal zone through mesothermal forest ecosystems to

alpine tundra ecosystems. The use of plant ecology to help delineate functional, manageable ecosystem units is emphasized using the taxonomy, autecology and synecology of some 450 plant species. Selected land use and management problems are observed and discussed. A minimum enrollment for the course is required.

**Note:** Offered in even-odd dated academic years.

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**Environmental Design 661** H(3-0)  
(formerly Environmental Design 683.18)

**Ecosystem Management and Planning**

Natural resource managers and planners are realizing (and operationalizing) the need for concordance between the dynamic process-and-pattern view of nature and the complex social milieu that forms the context for resource planning and management. The emerging field of ecosystem management is the embodiment of the professional response to this need. Examines the interdisciplinary approach of ecosystem management as the intersection between conservation biology, social science of natural resource management and organizational theory. Case studies and readings will be chosen to highlight current ecosystem management ideas and practice.

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**Environmental Design 663** H(3-0)

**Introduction to Policy Analysis**

Introduces students to the major issues and policy responses to economic, social and environmental problems in Canadian communities. Provides an overall understanding of the political, societal, financial and institutional constraints that affect the processes of policy formation and implementation. Assists in the development of practical skills in the analysis, planning, monitoring and evaluation of public policies.

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**Environmental Design 665** H(3-0)

**Drawing Skills and Studio Techniques for Designers.**

Introductory manual drawing studio for students of industrial design directed to developing skill in conceiving, developing and communicating ideas through various drawing styles, techniques and media.

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**Environmental Design 667** H(3-0)

**Geographic Information Systems for Environmental Design**

Introduction to the use of GIS in urban planning and environmental management. Discussions on GIS modeling focus on population projection, location theory, land use modeling and environmental and ecological management. Case studies from both the public and private sector provide the basis of assignments. Emphasis given to developing a sensitivity to the application appropriate for specific GIS problems.

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**Environmental Design 671** H(3-0)  
(formerly Environmental Design 683.35)

**Urban Design Theory**

Intended to provide students with an introduction to theories, concepts, methods and contemporary issues in urban design. Lectures, case studies, seminars and short project.

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**Environmental Design 673** H(3-0)  
(formerly Environmental Design 683.42)

**Wildlife Management Planning**

Reviews the history of wildlife management and the principles of effective planning, including scoping issues, dealing with constraints, goal setting, effective public involvement, conflict resolution, development and evaluation of alternatives, and applying science to evaluate management actions. The course begins with a series of introductory lectures on the fundamentals of wildlife management, history of wildlife management and policy, the need for science in management, and the changing context of public involvement in resource management. Lectures by professional practitioners provide insights into the practical world of resource management and planning. Assignments allow students to assess a wildlife issue, critically review selected wildlife management plans, and to write and present a strategic management plan.

**Environmental Design 677** H(3-0)

#### *Urban and Planning Law*

Examination of urban development from the perspective of constitutional constraints, concepts and powers of municipal corporations, planning machinery and legal techniques to effect or to challenge planning policy and practices.

**Note:** Offered in even-odd dated academic years.

**Environmental Design 679** H(3-0)

#### *Computer Modeling of the Environment*

Introduction to the use of computer modeling, animation and virtual reality in architecture and urban design. Professional CAD and rendering applications will be used to explore the aesthetic and technical aspects of design. Emphasis given to developing a sensitivity to the application appropriate to communicating three dimensional urban and natural form using computer generated images.

**Environmental Design 681** H(3-0)

#### *Environmental Ethics Seminar*

Intended to provide the student with a thorough grounding in the theory and practice of environmental ethics. Particularly directed to students in Environmental Design and concerns itself primarily with philosophical and ethical issues facing environmental scientists, planners and designers. Includes such topics as animal rights, deep ecology, eco-feminism, environmental pragmatism and sustainable development.

**Environmental Design 683** H(1.5-1.5T)

#### *Advanced Special Topics in Environmental Design*

Topics in architecture, environmental science, industrial design and planning.

**MAY BE REPEATED FOR CREDIT**

**Environmental Design 685** H(3-0)

#### *Industrial Design Clinic*

The evaluation of new products and services with emphasis on the Industrial Design content. The goal of the evaluation exercise is to provide the client with advice.

**Note:** Offered in odd-even dated academic years.

**Environmental Design 687** H(3-0)

#### *Ergonomics for Environmental Design*

Consideration of human physical, physiological, perceptual, and behavioural characteristics in the design of an object or environment for safe and effective use. Methods of obtaining human factors information, applying this information in a design

process, and evaluating designs against human factors constraints and user performance criteria. Sources of information and factors affecting the validity of information. The scope of human factors, ergonomics, anthropometry, and related disciplines. Independent research in applications of individual interest.

**Note:** Offered in odd-even dated academic years.

**Environmental Design 689** H(3-0)

#### *Industrial Design Technology*

Application of contemporary and developing technologies to industrial design. Content covers manufacturing processes and materials, with particular emphasis on metals and plastics. The course includes lectures, design exercises, seminar discussions, case studies and field trips.

**Note:** Offered in even-odd dated academic years.

**Environmental Design 691** H(3-0)

#### *History of Industrial Design*

Review of the social, cultural and technical environment of Industrial Design; major personalities, design movements and achievements in the design of products since 1900; current and emerging trends.

**Note:** Offered in odd-even dated academic years.

**Environmental Design 693** H(3-0)

#### *People and Products*

Seminar course exploring the interactions between people and products on their many levels and in their multifaceted complexity. Product perception, attitudes, meaning, semiotics, and psycho-social processes. Awareness of frameworks and concepts for understanding the interaction between people and products from industrial design, psychology, sociology, anthropology, ethology, and other disciplines. Application of such frameworks, concepts, and methods to the design process.

**Note:** Offered in even-odd dated academic years.

**Environmental Design 697** Q(1.5-1.5T)

#### *Advanced Special Topics in Environmental Design*

Topics in architecture, environmental science, industrial design and planning.

**MAY BE REPEATED FOR CREDIT**

**Environmental Design 701** H(0-8)

#### *Advanced Environmental Design Practice*

Interdisciplinary training in environmental design practice at an advanced level, centred on case studies, information probing and analysis; culminates in a policy planning, design or management assignment and an environmental design presentation on a real world problem.

**Prerequisite:** Environmental Design 609 or 711 or permission of instructor.

**Note:** Credit for both Environmental Design 701 and 702 will not be allowed.

**Environmental Design 702** F(0-16)

#### *Advanced Environmental Design Practice*

Interdisciplinary training in environmental design practice at an advanced level, centred on case studies, information probing and analysis;

culminates in a policy planning, design or management assignment and an environmental design presentation on a real world problem.

**Prerequisite:** Environmental Design 609 or 711 or permission of instructor.

**Note:** Credit for both Environmental Design 701 and 702 will not be allowed.

**Note:** Offered in a single session.

**Note:** Graded on CR/C/F basis only.

**Environmental Design 703** Q(0-3)

#### *Directed Study in Environmental Design*

Research, readings or a studio project in architecture, environmental science, industrial design or planning.

**Note:** Open only to Environmental Design students with consent of the Associate Dean (Academic).

**MAY BE REPEATED FOR CREDIT**

**Environmental Design 707** H(0-8)

#### *Ecological Management in Land Use Planning*

A studio course in which a real land use problem with a major ecological management component is taken on by the class as a consulting team. Problem definition, proposal preparation and the complete study from regional biophysical and land use inventory through client presentations of interim and final results are completed within the term. The final report must include development recommendations and environmental management guidelines. Projects are drawn mainly from the resource development industry, although other potential clients are considered.

**Environmental Design 709** H(3-0)

#### *Product and Technology Assessment*

Theoretical, legal, and practical aspects of assessing products and technologies for their environmental impacts (socio-economic, health, safety, and biophysical). Philosophy and theory of PATA, life cycle assessment, life cycle costing, risk assessment and management, green product endorsement and labelling, and purchasing guidelines are explored through lectures, seminar, and projects.

**Note:** Offered in odd-even dated academic years.

**Environmental Design 711** H(0-8)

#### *Theoretical Basis for Interdisciplinary Intervention and Design*

Comparisons and contrasts among disciplinary, multidisciplinary and interdisciplinary intervention and research. Focus on interdisciplinary teamwork knowledge and skills, on the ability to integrate research into professional real world contexts and on the ability to communicate research results effectively. This course is open only to students registered in a PhD program and is a prerequisite to Environmental Design 702.

**Environmental Design 713** H(3-1)

#### *Research and Analytic Methods for Planning*

Advanced planning techniques and methods for managing, analyzing, interpreting, and presenting data and information, with an emphasis on computer applications.

Not open to students with credit in Environmental Design 745.

**Note:** Open only to students in Environmental Design degree programs.

**Note:** Assumes a working knowledge of statistics.

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**Environmental Design 723** **H(3-0)**

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**International Development Planning: Theory and Practice**

Examines strategies for urban development within the context of a globalized economy. Competition for investment, global interdependence, technological change, growing income polarization, and environmental degradation are creating new challenges in the urbanizing world. Planning concepts and policies will be examined in different economic, institutional and cultural settings with an emphasis on economic, social and physical aspects of change. Selected best practices in North America, Western and Eastern Europe will illustrate different approaches to development and sustainability.

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**Environmental Design 725** **H(3-0)**

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**Topics in Wildlife Management and Resource Development**

The practice of wildlife management combines the science of ecology with an understanding of human social and economic needs. It acknowledges that the root of environmental problems lies in the economy and human culture. Through a series of assigned readings, seminars and discussions, the course will examine current issues and methods in wildlife management practice, conservation biology, wildlife population management, community-based wildlife management, and environmental impact assessment.

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**Environmental Design 731** **H(3-0)**

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**Cultural Tourism**

Designed to provide students with an introduction to the wide range of existing cultural tourism possibilities, while emphasizing the management design and planning dimensions of historic resources (historic sites, buildings, festivals, events and regional heritage initiatives). Case study approach whenever appropriate.

**Note:** Offered in even-odd dated academic years.

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**Environmental Design 743** **H(0-8)**

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**Studio in Urban Design**

These urban design studios explore contemporary problems in urban development and design, and emphasize a concern for place over an extended period of time, human behaviour - built form relationships and environment conservation goals. The approach aims to produce urban design that is locale-specific and yet responsive to changes in the ways we live.

**MAY BE REPEATED FOR CREDIT**

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**Environmental Design 747**  
**H(36 hours in Fall or Winter Session)**

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**Management in Environmental Science**

Introduces students to Environmental Management Systems and a set of 22 environmental management tools, which can be used by corporations and institutions to reduce their adverse impacts on the environment and to conserve resources. Lectures and seminars will review current practice, theory and provide specific examples. Ways and means of controlling activities of institutions and corporations that affect the environment, rather than on

managing the environment.

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**Environmental Design 749** **H(3-0)**

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**Water Management**

A broad perspective on water management issues through lectures, seminars, case studies and extensive readings. Water quality, quantity, technology, aesthetics, recreation and in stream uses with an emphasis on Canada and Western Canada in particular. A review of legislation and policy at municipal, provincial, federal and international levels.

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**Environmental Design 762** **F(0-16)**

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**Advanced Studio in Environmental Design**

Topics vary from year to year, depending on such factors as current issues and contemporary problems. A number of studio topics may be offered to accommodate a variety of interests.

**Note:** Full course offered in single session only.

**MAY BE REPEATED FOR CREDIT**

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**Environmental Design 783** **H(0-3)**

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**Directed Study in Environmental Design**

Research, readings or a studio project in architecture, environmental science, industrial design or planning.

**Note:** Open only to Environmental Design degree students with consent of the Associate Dean (Academic).

**MAY BE REPEATED FOR CREDIT**

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**Environmental Design 791** **H(0-8)**

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**Studio in Industrial Design**

Professional experience in design principles and/or analytical methods, inter-disciplinary approaches and specific skills. Topics vary from year to year, depending on such factors as current issues and contemporary problems. A variety of studios may be offered to accommodate the varied level of student development.

**MAY BE REPEATED FOR CREDIT**

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**Environmental Design 792** **F(0-16)**

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**Studio in Industrial Design**

Professional experience in design principles and/or analytical methods, interdisciplinary approaches and specific skills. Topics vary from year to year, depending on such factors as current issues and contemporary problems. A variety of studios may be offered to accommodate the varied level of student development

**Prerequisite or Corequisite:** Environmental Design 533.

**Note:** Full course offered in single session only.

**MAY BE REPEATED FOR CREDIT**

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**Environmental Design 793** **H(0-8)**

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**Workshop in Industrial Design**

Instruction and supervised experience in the use of tools and equipment for the development of study models, prototypes and graphic material related to student projects. Field work and term projects.

**793.01. Workshop Skills for Architecture**

**793.02. Workshop Skills for Industrial Design**

**793.03. Workshop Skills for Environmental Design.**

**NOT INCLUDED IN GPA**

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**Environmental Design 799** **H(3-0)**

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**Preceptorship**

A Preceptorship is a study and training arrangement made between a student and an employer or an equivalent supervisor which has specific educational objectives, a method of evaluation, and is an integral part of a student's Program of Studies. Preceptorships offer a number of benefits: acquiring skills and knowledge which may be better obtained outside the University; developing first-hand experience of professional design practice; preparing for more focused studies in the Faculty; and conducting research. An approved preceptorship assignment is equivalent to full-time studies. Preceptorships are not normally approved until a Program of Study is at least conditionally approved.

**MAY BE REPEATED FOR CREDIT**

Master's Degree Project. Students in Environmental Design, undertaking their Master's Degree Project, will register in PROJ 777/778.

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**Environmental Design  
Architecture** **EVDA**

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Instruction offered by members of the Faculty of Environmental Design.

**Senior Courses**

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**Environmental Design Architecture 511** **H(3-1)**

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**Building Science and Technology I**

Functioning of the building enclosure: demonstration of the behaviour of building elements and their sub-assemblies under differential temperature and pressure stresses; fundamentals of acoustics; nature and use of building materials; response of building materials to climatic cycles radiation, precipitation, heating and cooling.

**Note:** Credit for both Environmental Design Architecture 511 and Architectural Studies 449 will not be allowed.

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**Environmental Design Architecture 519** **H(3-0)**

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**Structures for Architects I**

An overview of the different structural systems which may be considered for buildings including: an intuitive application of the principles of mechanics; the relationship of form and structural resistance; typical applications in steel, reinforced concrete and composite systems; and long spans, tall buildings and space structure principles.

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**Environmental Design Architecture 521** **H(3-0)**

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**Introduction to Design Theories**

The contemporary cultural, social, and philosophical arenas in which architecture exists are examined through lectures, readings and seminars. The course runs in conjunction with Environmental Design Architecture 581.

**Note:** Credit for both Environmental Design Architecture 521 and Architectural Studies 455 will not be allowed.

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**Environmental Design Architecture 523** **H(3-0)**

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**History of Architecture and Human Settlements**

A survey history of architecture and human settlement from the prehistoric times until the present. The first course addresses the premodern traditions of the major world cultures. The second course explores the traditions of the Western world from the beginning of the Italian Renaissance until the present. The courses will examine the changes

in world view that have altered the course of architecture through the study of selected works of architecture and urbanism.

**523.01. History of Architecture and Human Settlements I - Premodern Traditions of the World**

**523.02. History of Architecture and Human Settlements II - The Western Tradition 1400 to Present**

**Note:** Credit for both Environmental Design Architecture 523 and any of Architectural Studies 457, Environmental Design 671 or Environmental Design Architecture 623 will not be allowed.

**Environmental Design Architecture 525 H(3-0)**  
(formerly Environmental Design 683.15)

**Architecture of the Western World Since 1900**

A survey of the most significant examples of modern architecture, defining their stylistic character in light of developments in technology, the history of ideas, and social and historical factors.

**Note:** Credit for both Environmental Design Architecture 525 and Art History 425 will not be allowed.

**Environmental Design Architecture 541 H(100 hours)**

**Graphics Workshop I**

A skill building course with instruction and supervised experience in basic drafting, sketching and rendering; principles of perspective, drawing and presentation conventions. A variety of instruction may be offered to accommodate the varied level of student development.

**Note:** Credit for both Environmental Design Architecture 541 and Architectural Studies 451 will not be allowed.

**Environmental Design Architecture 543 H(100 hours)**

**Graphics Workshop II**

Instruction and supervised experience in drafting, sketching and rendering; drawing and presentation conventions. Builds on Environmental Design Architecture 541. A variety of instruction may be offered to accommodate the varied level of student development.

**Note:** Credit for both Environmental Design Architecture 543 and Architectural Studies 453 will not be allowed.

**Environmental Design Architecture 561 H(3-0)**

**Architectural Professional Practice I**

An overview of the structure, organization and changing roles of the design professions through history with emphasis on emerging patterns of practice. The procedures, constraints and opportunities of practice in its legal, ethical and technical dimensions will be analysed using a case study method.

**Environmental Design Architecture 581 H(0-8)**

**Introductory Studio in Architecture**

An introduction to architectural design. Through exercises in the manipulation and composition of space and form students will develop the foundation of basic design skills necessary to pursue more advanced architectural design studios.

**Note:** Credit for both Environmental Design Architecture 581 and Architectural Studies 443 will

not be allowed.

**Environmental Design Architecture 582 F(0-16)**

**Studio II in Architecture**

An introduction to the application of ordering principles of architecture and to the numerous layers that contribute to the quality of inhabitation of place and space through design. Issues explored include the formal, the experiential and the theoretical concerns of architectural design in today's cultural context.

**Note:** Credit for both Environmental Design Architecture 582 and Architectural Studies 444 will not be allowed.

**Note:** Full course offered in single session only.

**Graduate Courses**

**Environmental Design Architecture 611 H(3-1)**

**Building Science and Technology II**

Theory and principles of structural, foundation and building service systems. Application of building science principles to building structure and enclosure, examination of the types and manufacture of building elements and the application of building components to specific problems in architecture.

**Environmental Design Architecture 615 Q(3-0)**

**Environmental Control Systems**

Approaches to the design of heating, cooling, and ventilation systems for buildings. Issues in system design such as energy efficiency and indoor air quality.

**Environmental Design Architecture 617 Q(3-0)**

**Architectural Lighting Design**

Fundamentals of light and visual perception. Approaches to the design of non-uniform and uniform lighting systems for buildings. Issues in system design such as human satisfaction and performance and energy efficiency. Development of skills in the selection and design of lighting systems.

**Environmental Design Architecture 619 H(3-0)**

**Structures for Architects II**

Fundamentals of Structural Analysis including: the characteristics and performance of the various components of structures; the terminology and notation necessary for effective teamwork with structural engineering consultants; and basic design calculations for simple structures.

**Environmental Design Architecture 621 H(3-0)**  
(formerly Environmental Design 683.34)

**Formal Strategies in Architecture**

The relationship between architectural intention and a syntactic knowledge of architecture. Precedents used as vehicles of investigation to clarify the ways meaning is 'contained' in form. The formal strategies utilized by the architect in the generation of architectural meaning through built form.

**Environmental Design Architecture 655 H(3-0)**

**Computer-Aided Architectural Design**

Three- and two-dimensional representation of designs. Issues in computer-aided architectural design such as consequences for conceptualization, experiential qualities of design with machines, new approaches to generation of designs, re-use of

information, possibilities of new information technologies, and personal productivity.

**Environmental Design Architecture 661 H(3-0)**

**Management and Cost Control in the Building Industry**

Organization for building design and construction according to various types of projects; networks and other systems for project control; building economics; cost analysis and estimating techniques; and cost controls during design and construction.

**Environmental Design Architecture 663 H(3-0)**

**Architectural Professional Practice II**

The nature of the building industry, stakeholders and many of the participants and their responsibilities. Brings together the theoretical framework of the architect's role in society with the practicality of managing a practice. Project management and office administration, trends, liabilities and systems for project control such as building economics; cost analysis and estimating techniques; and cost controls during design and construction.

**Environmental Design Architecture 682 F(0-16)**

**Intermediate Architectural Design Studio**

An intermediate design studio in which students work on projects defined by the instructor. Topics may vary from year to year. They are determined by the creative interests of the faculty assigned to the course. Enrollment may be limited.

**Note:** Full course offered in single session only.

**Note:** Normally open only to students in Faculty of Environmental Design programs.

**MAY BE REPEATED FOR CREDIT**

**Environmental Design Architecture 719 H(1.5-4)**

**Structures for Architects III**

Advanced structural systems for buildings including: theory and basic analysis of foundations; structural connections and composite structures; system characteristics and architectural intent; and case studies in contemporary building structures.

**Environmental Design Architecture 752 F(0-16)**

**Advanced Architecture Design Studio**

An advanced design studio that explores advanced issues in architectural design. Local, national, and international distinguished practitioners normally participate in these studios. Topics vary from year to year.

**Note:** Full course offered in single session only.

**Note:** Normally open only to students in Faculty of Environmental Design degree programs.

**MAY BE REPEATED FOR CREDIT**

**Environmental Design Architecture 753 H(0-8)**

**Studio in Architecture**

A series of studios that explore issues in architectural design, interdisciplinary approaches or specific skills. Topics may vary.

**Note:** May be offered in six week period.

**Note:** Normally open only to students in Faculty of Environmental Design degree programs.

**MAY BE REPEATED FOR CREDIT**

**Environmental Design Architecture 782 F(0-16)**

**Senior Studio in Architecture**

A research oriented design studio in which students collaborate with faculty in

projects exploring contemporary themes in architecture. Topics vary from year to year and are defined by the current research interests of Faculty. Enrollment may be limited.

**Note:** Full course offered in single session only.

**MAY BE REPEATED FOR CREDIT**

## Environmental Design Planning EVDP

Instruction offered by members of the Faculty of Environmental Design.

### Graduate Courses

**Environmental Design Planning 619 H(3-1)**

#### *Ecological-Environmental Planning*

The concepts of ecology and "designing with nature" in application to human settlement planning. Discussion of key concepts such as biomes, energy and nutrient flows, habitat, trophic gradients, etc. as these can be accounted for, altered, preserved, restored or manipulated in the various episodes of planning and designing for built environments. Conceptualizing the design of environments that enhance or create new urban ecological regimes conducive to sustainability. Examples ranging from general land use plans to housing and design projects.

**Note:** Not open to students with credit in Environmental Design Planning 634.

**Environmental Design Planning 634 F(3-0)**

#### *Professional Planning Practice 1: Skills and Knowledge*

The first in an integrated set of core courses for planning students that addresses priority knowledge and skill sets. A comprehensive lecture, workshop and studio course covering history, theory and practice of planning. An introduction to physical planning, and to decision-making frameworks and techniques is incorporated.

**Note:** Not open to students with credit in Environmental Design 683.91 and 683.96.

**Note:** The assignments assume a working knowledge of computer applications, including spreadsheets and databases.

**Environmental Design Planning 636 F(3-0)**

#### *Professional Planning Practice 2: Skills and Knowledge*

The second in an integrated set of core courses for planning students that addresses priority knowledge and skill sets. A comprehensive lecture, workshop and studio course covering history, theory and practice of planning. Impact assessment methods, ecological and economic frameworks and techniques are addressed. The physical planning studio module assumes basic graphic communication skills.

**Note:** Not open to students with credit in Environmental Design 683.92 and 683.97.

**Note:** The assignments assume a working knowledge of computer applications, including spreadsheets and databases.

**Environmental Design Planning 639 H(3S-0)**

#### *Master's Degree Project in Planning: The Process*

A seminar course to initiate the process of developing and designing the student's Master's Degree Project in Planning. At the completion of the course, the student is expected to have an approvable MDP proposal and a research plan.

**Note:** Graded on CR/C/F basis only.

**Note:** Passing grades on any assignment or on the course does not necessarily imply that the Faculty must accept or approve the student's proposal.

**Environmental Design Planning 641 H(3S-0)**

#### *Master's Degree Project Research in Planning*

A seminar course to facilitate the timely preparation of the Master's Degree Project in Planning, including its preparation, writing and defense.

**Prerequisite:** Unconditionally approved Program of Study and successful completion of Environmental Design 683.86 or Environmental Design Planning 639.

**Note:** Graded on CR/C/F basis only.

**Note:** Passing grades on any assignment or on the course does not necessarily imply that the MDP Supervisory or Examining Committee must accept or similarly evaluate work submitted to it as part of the MDP.

**Environmental Design Planning 711 Q(0-4T)**

#### *Advanced Practicum in Professional Planning Practice*

Approved senior student work experience in professional planning practice. Offered in cooperation with practising professionals and the Alberta Association of the Canadian Institute of Planners.

**Prerequisite:** Conditionally approved Program of Study.

**Note:** Graded on CR/C/F basis only.

**MAY BE REPEATED FOR CREDIT**

**Environmental Design Planning 713 H(0-4T)**

#### *Advanced Practicum in Professional Planning Practice*

Approved senior student work experience in professional planning practice. Offered in cooperation with practising professionals and the Alberta Association of the Canadian Institute of Planners.

**Prerequisite:** Conditionally approved Program of Study.

**Note:** Graded on CR/C/F basis only.

**MAY BE REPEATED FOR CREDIT**

## Environmental Science ENSC

Instruction offered by members of the Faculty of Science and the Faculty of Social Sciences.

Program Director – E. A. Dixon

Limited amounts of non-scheduled class time involvement will be required for these courses.

### Senior Courses

**Environmental Science 401 H(160 hours)**

#### *Environmental Science Field Course I*

Working in environmental systems, students will be introduced to methods of identifying components of ecosystems, surveying plant and animal communities, and for making quantitative assessments of these communities. The course will be held at the Kananaskis Field Station two weeks immediately prior to the commencement of the Fall Session.

During the Fall Session, participants in the course will meet for three hours per week to process field data and to continue discussions on ecological methods and on aspects of biodiversity (particularly in W. Canada).

**Note:** Open only to students in the Environmental Science program, or by consent of the Program Director

**Environmental Science 501 H(160 hours)**

#### *Environmental Science Field Course II*

The focus will be on disturbances to aquatic and terrestrial ecosystems. Day-length visits will be conducted to appropriate areas that have either undergone or are undergoing severe disturbance (e.g., forest clearcutting, water pollution, open pit mining, etc.). Discussion of potential reclamation strategies will take into consideration a range of impacts (e.g., sociological, economic, chemical, ecological, etc.) of each strategy.

**Note:** Open only to students in the Environmental Science program, or by consent of the Program Director.

**Environmental Science 502 F(3-3)**

#### *Special Problems in Environmental Management*

Briefly surveys many aspects of the professional practice of environmental science including: environmental management, audit and accounting, law and regulation, life cycle assessment, ethics and philosophy, toxicology and epidemiology, hazardous waste management and remediation and reclamation technologies. Includes a major collaborative research project.

**Note:** Open only to students in the Environmental Science program, or by consent of the Program Director.

**Environmental Science 503 H(3-0)**

#### *Environmental Assessment and Hearings*

Environmental assessment is a general policy process meant to minimize the net environmental effects of a development (e.g., golf course, pulp and paper mill, mine). This course formally introduces students to environmental impact assessment (EIA), which is implicit in much of Environmental Science 401, 501 and 502. A review of the key components of federal and Alberta EIA in the first half of the course will serve as a basis for preparing group projects which will be presented in class within simulated environmental assessment hearings. The hearings will highlight the complex problems encountered when scientific evidence is used as a basis for decision-making and policy.

**Note:** Open only to students in the Environmental Science program, or by consent of the Program Director.

**Environmental Science 504 F(0-9)**

#### *Research Project in Environmental Science*

An independent study or research project under the supervision of one or more faculty members in the Environmental Science program. Originality is emphasized and laboratory and/or field studies are encouraged. Formal written and oral reports will be presented as a necessary component of this course.

**Prerequisite:** Consent of the Environmental Science Program Director.

**MAY BE REPEATED FOR CREDIT**

**Environmental Science 505 H(0-9)**

#### *Special Problems in Environmental Science*

A research project under the supervision of one or more faculty members in the Environmental Science program. Formal written and oral reports will be presented as a necessary component of this course.

**Prerequisite:** Consent of the Environmental Science Program Director.

**MAY BE REPEATED FOR CREDIT**

## Film

## FILM

Instruction offered by members of the Faculties of Communication and Culture, Fine Arts, and Humanities. For other related offerings, please see the Film Studies listing in the Interest Areas section of this Calendar. For information, contact the program Co-ordinator or one of the faculties listed above.

### Junior Course

**Film 200** **F(2-3)**

#### *Introduction to Film Studies*

An introduction to the techniques and major genres of film, the critical analysis of film, and the history of cinema. Intended to prepare students for further work in Film Studies.

### Senior Courses

**Film 300** **F(2-3)**

#### *Introduction to Film Theory*

An introduction to the theoretical perspectives that have shaped our understanding of film over the past century. Emphasis will be placed on the analysis of various theories relating to the cinema and the impact that film theory has had on practices of film production.

**Prerequisite:** Film 200.

**Film 301** **H(2-3)**

#### *Topic in National Cinema*

Topics will explore various aspects of, or historical moments in, a particular nation's cinematic culture. Topics might include: Quebecois cinema, current British cinema, German cinema Between the Wars, Canadian cinema, the History of Chinese cinema, etc.

**MAY BE REPEATED FOR CREDIT**

**Film 305** **H(2-3)**

#### *Topic in Genre*

Topics will focus on the style, narrative form, and historical evolution of selected genres, for example, the Documentary, the Western, the Melodrama, the Musical, etc.

**MAY BE REPEATED FOR CREDIT**

**Film 307** **H(2-3)**

#### *Topic in Cinema and Gender Studies*

Topics will explore the representation of gender and sexuality in cinema. Topics might include: Images of Women in the American 1940s, Lesbian Images in Current Cinema, The Queer 1950s, Comparative Images of Women in American and French Cinema, etc.

**MAY BE REPEATED FOR CREDIT**

**Film 321** **H(2-3)**

#### *History of Popular Cinema*

An assessment of the various ways in which the

history of film production can be approached, including the development of filmmaking technologies, evolutions in cinematic style and narrative traditions, particularly as they relate to popular cinema, and changing industrial practices.

**Prerequisite:** Film 200.

**Film 323** **H(2-3)**

#### *Issues in Film History*

An introduction to key concepts in cinematic historiography. Emphasis will be placed upon non-traditional or non-canonical films and their relationship to dominant histories of filmmaking.

**Prerequisite:** Film 200.

**Film 380** **F(2-3)**

#### *The Art of the Cinema*

Intended for the non-specialist student, this course is designed to foster an appreciation of film culture and an understanding of a broad range of cinematic art.

**Note:** Not open to students with credit in Drama 380 or Film 200. May not be used to fulfill the requirements for the Minor in Film Studies.

**Film 401** **H(2-3)**

#### *Topic in Film Theory*

Topics will be organized around particular theorists, schools of theory, historical issues in film culture, or contemporary thought on film. Topics might include: Psychoanalysis and/as Film Theory; Kaja Silverman and Teresa de Lauretis; Modernism and Postmodernism; Feminist Film Theory; Queer Theory and Film; Postcolonial Theory and Film; Semiotics.

**Prerequisite:** One full-course equivalent in Film or Drama 380.

**MAY BE REPEATED FOR CREDIT**

**Film 403** **H(2-3)**

#### *Topic in the Director's Cinema*

Topics will examine the distinctive style and concerns of a particular director or directors.

**Prerequisite:** One full-course equivalent in Film or Drama 380.

**MAY BE REPEATED FOR CREDIT**

**Film 501** **H(0-1T)**

#### *Research in Selected Topics*

Independent study and directed reading or research for students in the Film Minor program in their third or fourth year. Students will produce a major essay or complete a significant research project.

**Prerequisite:** Students who wish to propose a Film 501 topic must secure a supervisor among the Film instructors and have the topic approved by the Coordinator of Film Studies. The deadlines are June 30 for Fall Session projects and November 30 for Winter Session Projects.

**MAY BE REPEATED FOR CREDIT**

**Film 505** **H(2-3)**

#### *Advanced Topics in Film Studies*

A seminar for senior students that focuses on a formal, theoretical or historical issue in Film Studies or the culture of the Cinema. Reflects the current research of the instructor.

**Prerequisites:** Three full-course equivalents in Film,

including Film 401.

**MAY BE REPEATED FOR CREDIT**

## Finance

## FNCE

Instruction offered by members of the Haskayne School of Business.

Finance Chairperson – A. Kleffner

**Note:** Students have the opportunity to take courses offered by the Haskayne School of Business without the stated prerequisites, with the written permission of the Associate Dean (Undergraduate Programs) as appropriate, upon the recommendation of the instructor of the course. However, should a student fail to achieve satisfactory standing in any course for which the stated prerequisite(s) is (are) lacking, he/she may be required to successfully complete the stated prerequisite(s) prior to being permitted to repeat the course. Students are required to have consent of the Haskayne School of Business Office before registering in 600-level courses offered by the Haskayne School of Business.

### Senior Courses

**Finance 317** **H(3-3T)**

#### *Financial Management*

Focuses on the investment and financing decision of the firm. Heavy emphasis is placed on valuation and management of working capital and long term assets. The Canadian financial system and sources of financing are surveyed with a view to integrating the financing and investment decisions of a firm.

**Prerequisites:** Admission to the Haskayne School of Business, second year standing, Mathematics 249 or 251, Economics 201 and 203, Statistics 213 and 217, Accounting 317, and Management Studies 291.

**Note:** Credit for both Finance 317 and either 351 or 353 will not be allowed.

**Note:** All students are required to complete a pre-session study workbook one week prior to the last day to drop/add a course.

**Finance 341** **H(3-1T)**

#### *Canadian Business Finance*

An introduction to business financial management practices in Canada including investment decision, capital markets, and sources, uses and costs of capital over short, intermediate and long run situations.

**Prerequisite:** Third year standing.

**Note:** This course is not available for credit toward the Bachelor of Commerce degree. Until August 15, preference in enrollment is given to students who have declared a Management and Society minor.

**Finance 343** **H(3-2T)**

#### *Personal Financial Management*

An introduction to personal financial management practices in Canada. Topics discussed may include goal setting, personal financial statements, the mathematics of personal finance, taxation, general and life insurance, retirement planning, investments, and estate planning. Completion of the course should enable students to properly prepare and plan their own financial future.

**Prerequisite:** Second year standing.

**Note:** This course is not available for credit toward the Bachelor of Commerce degree. Until August 15, preference in enrollment is given to students who have declared a Management and Society minor.



## Finance 443 H(3-1T)

### Security Analysis and Investments

Techniques and theories used in selecting securities for various investment objectives. Evaluation of risks and opportunities with respect to purchase, sale, or retention of investments.

**Prerequisites:** Third year standing and Finance 317.

## Finance 445 (formerly Finance 595.01) H(3-IT)

### Futures and Options

A study of financial contracts for which the payoffs are contingent upon or derived from the value pre-specified underlying economic variables. Typical underlying variables include the spot price of a commodity and the price of a stock. These contracts are used extensively for hedging and speculative purposes. They also provide useful information about forecasts of the underlying economic variable in a process called "price discovery."

**Prerequisites:** Third year standing and Finance 317.

**Note:** Credit for both Finance 445 and Actuarial Science 539.04 will not be allowed.

## Finance 447 H(3-1T)

### Capital Budgeting

Capital investment policies of the firm. Real options analysis is used for valuation and decision making. Emphasis on operational matters such as required rate of return estimation, risk analysis, tax factors, and optimization model building. Abandonment decisions and buying versus leasing.

**Prerequisites:** Third year standing and Finance 317.

## Finance 451 H(3-1T)

### Advanced Financial Management

Focuses on understanding the advanced theories and practices of financial management that are required for finance majors. Topics include market imperfections arising from asymmetric information and taxation and options. It applies these concepts to study incentives and conflicts in various financial agent pairings. These concepts are then used in a theoretical and empirical study of important financial decisions, such as capital structure, dividend policy, retained ownership, security underwriting, management of distressed firms, managerial compensation, corporate governance and mergers.

**Prerequisites:** Third year standing and Finance 317.

## Finance 459 H(3-0)

### Investment Decisions in the Non-Corporate Sector

A study of investment decision problems not normally relating to but affecting the private corporate sector. Individual investment decision models for the public and non-corporate sectors are explored in depth. Supply of and demand for funds in these two sectors are also discussed.

**Prerequisites:** Third year standing and Finance 317.

## Finance 461 H(3-1T)

### International Finance

A study of the forces affecting the financial environment of the corporate sector which appear to stem from requirements in the international sector. Balance-of-payments problems, exchange rates, international reserve creations and transfers are some of the major elements studied.

**Prerequisites:** Third year standing and Finance 317.

## Finance 463 H(3-0)

### Portfolio Theory and Management

Analysis of the major aspects of the grouping of financial assets. Portfolio analysis and its application to portfolio management, capital market theory and the measurement of financial performance in the presence of risk.

**Prerequisites:** Third year standing and Finance 317.

## Finance 470 F(3-0)

### The Calgary Portfolio Management Trust

A comprehensive hands-on review of the modern theories and applications of portfolio management. Students will be responsible for completing the fiduciary duties of an actual fund manager, reporting to a board of directors. Topics may include: selecting securities, hedging with covered options, benchmarking a portfolio, financial reporting, evaluation of risk, risk/return tradeoffs and management.

**Prerequisites:** Third year standing and Finance 317.

**Note:** Credit for both Finance 470 and either 443 or 463 will not be allowed.

**Note:** Enrollment is strictly limited by the Haskayne School of Business and the student must be a Finance concentrator in the BComm program.

## Finance 475 H(3-1T)

### Management of Financial Institutions

Management of funds and their allocation among cash, primary reserves, loans and investments to provide liquidity and earnings. Services to depositors. Consideration of factors involved in the lending decision, pricing of services, branch location, etc. Strategies for maintaining profitability and liquidity in the face of changing monetary policy.

**Prerequisites:** Third year standing and Finance 317.

## Finance 479 (formerly Finance 595.03) H(3-0)

### Corporate Risk Management

Introduction to the management of operational and hazard risks based on contemporary financial theories, including risk identification, loss estimation, risk control, risk financing with insurance and other techniques, and enterprise risk management.

**Prerequisites:** Third year standing and Finance 317.

## Finance 595 H(3-1T)

### Selected Topics in Financial Management

Investigation of selected topics related to financial management, emphasizing the application of financial management principles to actual problems in the corporate sector.

**Prerequisites:** Third year standing and Finance 317.

**MAY BE REPEATED FOR CREDIT**

## Graduate Courses

## Finance 601 (formerly Finance 651) H(3-1)

### Managerial Finance

Financial analysis and decision-making within an organization. Cash flows, asset management, and financing techniques. Capital budgeting under certainty and uncertainty; cost of capital concepts and studies.

**Prerequisite:** Management Studies 609 or Accounting 601.

## Finance 745 H(3-0)

### Futures and Options

After presenting basic definitions, institutional details, and strategies, a general theory of derivative pricing based on the principle of No Arbitrage will be developed. This theory will then be applied to the basic derivative contracts (futures, forwards, put options and call option) as well as exotic options. Using the binomial model, as well as the continuous time model of Black Scholes, hedging and replication will also be examined.

**Prerequisite:** Finance 601 or 651.

## Finance 751 H(3-0)

### Advanced Topics in Financial Administration

Classical and contemporary topics in the theory of finance, including risk and return, the asset selection decision, the financing decision, efficient market analysis, capital structure and cost of capital, the nature of capital markets, and international finance.

**Prerequisite:** Finance 601 or 651.

## Finance 753 H(3-1)

### Problems in Financial Management

The application of financial management principles to actual problems mainly in the corporate sector, including such areas as working capital, management, short, intermediate and long-term financing problems, dividend policy and reorganization.

**Prerequisite:** Finance 601 or 651.

## Finance 755 H(3-1)

### Capital Budgeting

Capital investment policies, real options, required rate of return calculation, mathematical programming models, tax factors, risk analysis, buy versus lease, abandonment considerations.

**Prerequisite:** Finance 601 or 651.

## Finance 757 H(3-0)

### Management of Financial Institutions

Managing a financial institution as contrasted with corporate financial management and investment management.

**Prerequisite:** Finance 601 or 651

## Finance 759 H(3-1)

### Investment and Portfolio Management

Theory and analysis of investment and portfolio management decisions. Evaluation of performance of individual and professional investors and portfolio managers.

**Prerequisite:** Finance 601 or 651.

**Finance 763 H(3-0)****Corporate Risk Management**

Comprehensive introduction to theory and practice of the management of operational and hazard risks based on contemporary financial theories, including risk identification, loss estimation, risk control, risk financing with insurance and other techniques, captive insurance, crisis management, reinvestment decisions, and enterprise risk management.

**Prerequisite:** Finance 601 or 651.

**Finance 765 H(3-0)****Mergers and Acquisitions**

A study of economic theory and practical issues around takeover strategies, and takeover defence strategies. Valuation issues, corporate restructuring, corporate governance, and methods of ensuring congruence between management and shareholder goals are also discussed.

**Prerequisite:** Finance 751 or consent of the business school.

**Finance 785 H(3-0)****New Venture Finance**

Problems of valuing and financing new ventures. Considerable emphasis is placed on deal structuring, both within a case and project context. Valuing a local new venture as well as developing a detailed financial plan, including a recommended deal structure.

**Prerequisite:** Finance 601 or 651 or consent of the business school.

**Finance 789 H(3S-1)****Seminar in Financial Management**

Intensive study and discussion of current literature and research with respect to selected, advanced topics in Finance.

**MAY BE REPEATED FOR CREDIT**

**Finance 795 H(3-0)****International Finance**

A study of the international financial environment and the issues firms face when operating in this environment. Currency regimes, currency crises, balance of payments, exchange rate and interest rate parity conditions, supernational agencies, political risks, management of foreign exchange exposure are some of the major topics studied

**Prerequisite:** Finance 601 or 651.

**Finance 797 H(3S-0)****Advanced Seminar in Finance**

**Prerequisite:** Consent of the business school.

**MAY BE REPEATED FOR CREDIT**

**PhD Course****Finance 799 H(3S-0)****Doctoral Seminars in Finance****799.01. Theory of Finance****799.02. Empirical Methods in Finance****799.03. Topics in Finance****799.04. Financial Engineering****Fine Arts****FINA**

Instruction offered by members of the Faculty of Fine Arts.

**Junior Course****Fine Arts 201 H(3-0)****Introduction to the Fine Arts**

A survey of major issues in the fine arts. An overview of the interactions among the arts; the arts and society; an introduction to criticism and aesthetics; technical aspects of the individual arts.

**Note:** Required course for all BMus, BA (Music) and BA Honours (Music) students. Consent of the Faculty is required for all students.

**Senior Courses****Fine Arts 501 H(3-0)****Topics in Fine Arts: Comparative Studies and Critical Theory**

Topics may include aesthetic theory, theory and/or history of collaborative arts, critical theory, and the history of criticism.

**Prerequisite:** One full Senior Course in either Art, Dance, Drama or Music.

**Note:** Required course for all BMus, BA (Music) and BA Honours (Music) students. Consent of the Faculty is required for all students.

**MAY BE REPEATED FOR CREDIT**

**Fine Arts 503 H(2-2)****Topics in Fine Arts: Collaborative Production Projects**

An experiential learning course, in which students collaborate to produce works combining elements from among the programs in studio art, acting and directing, design, dance, music composition and performance.

**Prerequisite:** One full Senior Course in either Art, Dance, Drama or Music.

**MAY BE REPEATED FOR CREDIT**

**Fine Arts 507 H(0-3)****Topics in Interdisciplinary Multi-Media Research**

Instruction in the creation of interdisciplinary artworks (including performance, installation and computer projection).

**Prerequisite:** Fine Arts 201 or consent of the Faculty.

**MAY BE REPEATED FOR CREDIT**

**Fine Arts 523 H(3-0)****Arts Administration I**

An introduction to management in the fine arts, focusing on arts-related career issues as they apply to individual artists.

**Prerequisites:** Accounting 321, Management Studies 291, six optional half courses from the Minor in Management and Fine Arts option list.

**Fine Arts 525 H(3-0)****Arts Administration II**

A continuation of Fine Arts 523, covering arts-related issues with a focus on the management of arts groups and institutions.

**Prerequisite:** Fine Arts 523.

**Graduate Courses****Fine Arts 601 H(0-3)****Studies at the Banff Centre**

Interdisciplinary fine arts studies. Although the Banff Centre does not provide credit course instruction, students with advanced experience in art, dance, drama or music at the Banff Centre may apply for graduate-level credit from the University of Calgary.

**Prerequisite:** Consent of the Faculty.

**MAY BE REPEATED FOR CREDIT**

**NOT INCLUDED IN GPA**

**Fine Arts 603 H(3-0)****Topics in Fine Arts: Interdisciplinary Seminar**

Interdisciplinary seminar in the advanced study and interpretation of the interrelationships between music, the fine arts, and the history of ideas, using a theme-oriented approach.

**Note:** This is a required course in the PhD program for Music Education, Composition and Musicology.

**MAY BE REPEATED FOR CREDIT**

**Fine Arts 607 H(3-0)****Topics in Multi-Media Research**

Concentrated instruction in computer applications in the Fine Arts

**Prerequisite:** Consent of the Faculty.

**MAY BE REPEATED FOR CREDIT**

**French****FREN**

Programme offert par le Département d'études françaises, italiennes et espagnoles de la Faculté des Humanités.

Directeur du Département: A.J. Wall

Il est recommandé aux étudiants de consulter le Département à chaque étape de la planification de leur programme.

Les étudiants admis au baccalauréat en français se verront désigner un professeur du Département qui sera leur conseiller attitré et les aidera à planifier leur programme ainsi qu'à choisir leurs cours.

Les étudiants de langue maternelle française, italienne et espagnole et ceux dont le niveau d'études dans ces langues est supérieur à celui du diplôme de fin d'études secondaires (y compris les étudiants provenant d'un programme bilingue ou d'immersion) doivent obligatoirement consulter le Département pour se faire placer dans le cours approprié. Les locuteurs natifs ne peuvent se faire créditer des cours de langue ni par équivalence ("advanced credit") ni par évaluation spéciale ("special assessment").

Pour s'inscrire aux cours de niveau intermédiaire ou avancé (niveau 300 et suivants, sauf French 335 ou 337), l'étudiant doit avoir réussi au cours French 215 et 217, ou 220, ou 221 ou avoir obtenu l'autorisation du Département.

Certains cours intermédiaires et avancés ne sont pas offerts tous les ans. Pour les cours proposés pour l'année en cours, prière de se reporter à l'horaire général de l'Université.

Remarque: Pour s'inscrire à un cours de langue en français, l'étudiant doit avoir obtenu au moins la note de "C-" dans les cours préalables.

Instruction offered by members of the Department of French, Italian and Spanish in the Faculty of Humanities.

Department Head – A. J. Wall

Students are encouraged at all times to seek departmental guidance in planning any aspect of their programs. Upon admission to the Major in French each student will be assigned a departmental advisor who will assist with program planning and course selection.

French, Italian and Spanish-speaking students or students with more than matriculation in these languages (including graduates of a bilingual or immersion program) **MUST** consult the Department to be placed in a course corresponding to their ability. Native speakers are not eligible to take language courses by special assessment or to receive advanced credit for them.

To register in Senior Courses (300 level and above, except French 335 or 337), students must have completed French 215 and 217, or 220, or 221 or have obtained the consent of the Department.

Not all Senior Courses are offered every year. Current course offerings are listed in the Master Timetable.

**Note:** All university level prerequisites for French language courses must be met with a grade of "C-" or better.

## Junior Courses

**French 209** **H(4-1)**

### *Beginners' French I*

Basic elements of the French language, including training in comprehension, speaking, reading and writing of French.

**Note:** Not open to students with credit in French 20, French 30, French 31 (or equivalent).

**Note:** May not be counted towards a Minor, a Major or Honours in French.

**French 211** **H(4-1)**

### *Beginners' French II*

A continuation of French 209.

**Prerequisite:** French 20, French 209 or consent of the Department.

**Note:** Not open to students with credit in French 30 or French 31 (or equivalent).

**Note:** May not be counted towards a Minor, a Major or Honours in French.

**French 213** **H(4-1)**

### *Intermediate French*

Further development of abilities in spoken and written French. Review of French grammar along with extensive oral and written practice.

**Prerequisite:** French 211, French 30 or consent of the Department.

**French 215** **H(2-2S-1)**

### *Francophonie: Language and Culture*

A study of French language and culture in French-speaking countries, including France, Canada, and countries in Africa and the Caribbean. Introduction to sources and research instruments for such study, leading to written and oral work.

**Prerequisite:** French 30N or 30S or 31 (or equivalents), or French Language Arts 30, or French 213 or consent of the Department.

**Note:** Not open to students with credit in any University French course other than French 209, 211, 213, 217, 235, 237, 335, 337.

**French 217** **H(2-2S-1)**

### *Introduction to Texts in French*

A study of French language, introducing the basic techniques of textual analysis.

**Prerequisite:** French 30N or 30S or 31 (or equivalents), or French Language Arts 30, or French 213, or consent of the Department.

**Note:** Not open to students with credit in any University French course other than French 209, 211, 213, 215, 235, 237, 335, 337.

**French 235** **H(0-3T)**

### *Reading French (Beginners I)*

An introduction to French for the purpose of developing a beginning level reading skill. Second language learning strategies, basic grammar and vocabulary. No previous knowledge of French required. Computer-based independent study.

**Note:** Not open to students with credit in French 30 or in any University French course.

**Note:** May not be counted towards a Minor, a Major or Honours in French.

**French 237** **H(0-3T)**

### *Reading French (Beginners II)*

A continuation of French 235. Computer-based independent study.

**Prerequisite:** French 235 or consent of the Department.

**Note:** May not be counted towards a Minor, a Major or Honours in French. Not open to students with credit in French 30 or any University French course other than French 209, 235, 251, 305.

## Senior Courses

Ne sont admis aux cours avancés que les étudiants qui possèdent déjà une connaissance suffisante de la langue française. En cas de doute, prière de consulter le Département.

Senior Courses are open only to students who have a sufficient knowledge of French. Students who are in doubt about their level of knowledge should consult the Department.

**French 315** **H(3-1)**

### *Vocabulaire et analyse grammaticale 1*

Analyse grammaticale et enrichissement du vocabulaire à l'aide de l'étude de textes. Discussions ayant pour thème la culture au sens large; pratique de la lecture et de l'écriture.

**Préalables:** French 215 et 217, ou 220, ou 221, ou autorisation du Département.

**Remarque:** Non accessible aux étudiants avec accréditation en French 319, 320 ou 321.

**French 317** **H(3-1)**

### *Vocabulaire et analyse grammaticale 2*

Suite du cours French 315.

**Préalable:** French 315, 319 ou autorisation du Département.

**Remarque:** Non accessible aux étudiants avec accréditation en French 320 ou 321.

**French 323** **H(3-0)**

### *Introduction au Canada francophone*

Étude de productions culturelles en langue française qui sont représentatives de plusieurs régions du Canada.

**Préalables:** French 215 et 217, ou 220, ou 221, ou autorisation du Département.

**Remarque:** Non accessible aux étudiants avec accréditation en French 369.

**French 333** **H(3-0)**

### *La francophonie vue à travers les médias*

Étude de sujets d'actualité de la francophonie, tels que présentés dans des médias divers (journaux, magazines, radio, télévision, etc.)

**Préalables:** French 215 et 217, ou 220, ou 221, ou autorisation du Département.

**French 335** **H(0-3T)**

### *Reading French (Advanced I)*

Development of advanced reading skills in French. Building on strategies, grammar and vocabulary acquired in French 237 or other French courses, more difficult texts will be studied and reading comprehension improved. Readings drawn mainly from journalistic sources, and specialized publications in the Humanities and Social Sciences. Computer-based independent study.

**Prerequisite:** French 30, 213, 237 or consent of the Department.

**Note:** May not be counted towards a Minor, a Major or Honours in French. Not open to students with credit in French 215 or higher (other than French 235 and 237).

**French 337** **H(0-3T)**

### *Reading French (Advanced II)*

A continuation of French 335. Computer-based independent study.

**Prerequisite:** French 335 or consent of the Department.

**Note:** May not be counted towards a Minor, a Major or Honours in French. Not open to students with credit in French 215 or higher (other than French 235 and 237).

**French 339** **H(3-0)**

### *Concepts littéraires*

Concepts fondamentaux de l'analyse littéraire. L'accent sera placé principalement sur les traditions littéraires des pays francophones. Initiation à l'utilisation de sources bibliographiques particulières à l'étude de la littérature de langue française.

**Préalables:** French 215 et 217, ou 220, ou 221, ou autorisation du Département.

**Remarque:** Non accessible aux étudiants avec accréditation dans plus d'un des cours suivants: French 351, 353, 355, 363 et 365.

**French 343** **H(3-2)**

### *Cinéma de langue française*

Introduction à l'analyse de films en français.

**Préalables:** French 215 et 217, ou 220, ou 221, ou autorisation du Département.

**French 349** **H(2-2)**

### *Phonologie française*

Introduction à la structure des sons de la langue

française. Concepts fondamentaux de la phonologie: inventaire des sons, liaisons, e muet, etc. Analyse contrastive et comparaison avec l'anglais. Applications en classe et au laboratoire.

**Préalables:** French 215 et 217, ou 220, ou 221, ou autorisation du Département.

**Remarque:** Non accessible aux étudiants avec accréditation en French 345.

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### French 359 H(3-0)

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#### *Histoire des idées*

Concepts fondamentaux de l'histoire des idées et panorama de la pensée française sous les diverses formes qu'elle revêt dans les domaines littéraire, artistique, philosophique, politique et religieux.

**Préalables:** French 215 et 217, ou 220, ou 221, ou autorisation du Département.

**Remarque:** Non accessible aux étudiants avec accréditation en French 367.

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### French 399 H(3-0)

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#### *Langue française, littérature et culture*

Le format et le contenu peuvent varier d'une année à l'autre.

**Préalables:** French 215 et 217, ou 220, ou 221, ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 415 H(3-1)

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#### *Étude approfondie de la langue française*

Études appliquées de phonologie, de syntaxe, de sémantique et de lexicologie. Perfectionnement de techniques choisies d'écriture. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** French 317, 320, 321 ou autorisation du Département.

**Remarque:** Non accessible aux étudiants avec accréditation en French 419 ou 421.

**MAY BE REPEATED FOR CREDIT**

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### French 439 H(3-0)

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#### *Le Canada francophone*

Études avancées des cultures francophones du Canada: langue, littérature et cinéma. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** Quatre demi-cours de français, parmi les suivants: French 315, 317 (ou 319, 320, 321), 339 (ou 351, 353, 355, 363, 365), 349 (ou 345), 359 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 449 H(3-0)

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#### *Littératures francophones contemporaines*

Études culturelles et littéraires à partir de textes modernes écrits en français et originaires des grandes régions de la francophonie (par exemple, le Maghreb, les Antilles ou l'Indochine). Les sujets traités peuvent inclure la tradition et la modernité, la quête de l'identité, le post-colonialisme, la différence et l'assimilation ainsi que le statut de la femme. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** Quatre demi-cours de français, parmi les suivants: French 315, 317, (ou 319, 320, 321), 339 (ou 351, 353, 355, 363, 365), 349 (ou 345), 359 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 459 H(3-0)

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#### *Littérature du 19e siècle*

Études spécialisées en littérature française du 19e siècle. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** Quatre demi-cours de français, parmi les suivants: French 315, 317 (ou 319, 320, 321), 339 (ou 351, 353, 355, 363, 365), 349 (ou 345), 359 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 479 H(3-0)

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#### *Langue et société*

Étude de la langue utilisée dans le monde francophone à l'aide des concepts fondamentaux de la sociolinguistique. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** Quatre demi-cours de français, parmi les suivants: 315, 317 (ou 319, 320, 321), 339 (ou 351, 353, 355, 363, 365), 349 (ou 345), 359 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 499 H(3-0)

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#### *Projet spécial en études françaises (langue, littérature ou culture)*

Les thèmes de ce cours seront abordés à l'aide de méthodes novatrices.

**Préalables:** Quatre demi-cours de français, parmi les suivants: French 315, 317 (ou 319, 320, 321), 339 (ou 351, 353, 355, 363, 365), 349 (ou 345), 359 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 503 Q(0-3T)

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#### *Projet de fin d'études du Premier cycle de français*

Recherche pluridisciplinaire de fin d'études, rédigée en français, visant à relier les connaissances et aptitudes acquises dans le cadre de la concentration en français à celles qui ont été acquises dans une spécialisation autre que le français (par exemple, une autre concentration, une mineure ou une minispecialisation). Les projets seront exposés oralement en classe et ensuite discutés.

**Préalable:** Trois demi-cours de français du niveau 400 ou autorisation du Département.

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### French 505 Q(0-3T)

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#### *Études indépendantes. Stage de travail en français*

Stage en milieu francophone, sous la direction de professeurs du Département. Rapport de fin de stage rédigé en français. Les étudiants obtiendront soit la note de CR (Completed Requirements) soit celle de F (Failed).

**Préalable:** Autorisation du Département, obtenue après remise par l'étudiant d'une proposition écrite

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### French 507 Q(0-3T)

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#### *Études indépendantes. Stage de recherche en français*

Stage de recherche, effectué sous la direction de professeurs du Département. Rapport rédigé en français. Les étudiants obtiendront soit la note de CR (Completed Requirements) soit celle de F (Failed).

**Préalable:** Autorisation du Département, obtenue après remise par l'étudiant d'une proposition écrite.

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### French 509 H(3-0)

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#### *Traduction*

Étude avancée de la théorie et de la pratique de la traduction. Les travaux de traduction se feront du français à l'anglais et de l'anglais au français, à partir de textes de nature diverse. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalables:** Romance Studies 409 et trois demi-cours de français de niveau 400 ou autorisation du Département.

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### French 511 H(3-0)

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#### *Théories critiques*

Présentation de certaines théories contemporaines qui ont cours en études littéraires et culturelles. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalables:** Trois demi-cours de français de niveau 400, ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 515 H(3-1)

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#### *Étude spécialisée de la langue française*

Étude avancée de la structure et de l'usage de la langue française. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** Trois demi-cours de français de niveau 400 ou autorisation du Département.

**Remarque:** Non accessible aux étudiants avec accréditation en French 519 ou 521.

**MAY BE REPEATED FOR CREDIT**

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### French 539 H(3-0)

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#### *Étude spécialisée du Canada français*

Séminaire sur des sujets avancés dans le domaine de la langue, de la littérature ou de la culture au sens large. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** Trois demi-cours de français de niveau 400 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 549 H(3-0)

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#### *Étude spécialisée de la francophonie*

Séminaire sur des sujets avancés ayant trait à la langue, aux littératures ou aux diverses cultures de la francophonie. Le format et le contenu peuvent varier d'une année à l'autre

**Préalable:** Trois demi-cours de français de niveau 400 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

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### French 557 H(3-0)

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#### *Littérature et culture françaises du 17e siècle*

Étude de textes choisis du "Grand siècle". Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** Trois demi-cours de français de niveau 400 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

**French 559** H(3-0)

**Littérature et culture françaises du 18e siècle**

Étude de textes choisis du Siècle des Lumières en France. Le format et le contenu peuvent varier d'une année à l'autre.

**Préalable:** Trois demi-cours de français de niveau 400 ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

**French 595** H(3-0)

**Perfectionnement des techniques de recherche**

Perfectionnement des techniques de recherche. Préparation de bibliographies spécialisées; l'accent sera mis sur l'analyse des sources secondaires. Rédaction de résumés et de propositions de recherche, selon le format en usage dans l'édition savante contemporaine. Utilisation avancée de la technologie et établissement de bibliographies informatisées.

**Préalables:** Trois demi-cours de français de niveau 400, ou autorisation du Département.

**Remarque:** Ce cours est réservé aux étudiants inscrits au programme du baccalauréat spécialisé ("Honours") de français.

**French 597** H(0-3T)

**Mémoire de baccalauréat spécialisé**

**Préalables:** French 595 plus trois demi-cours de français de niveau 400, ou autorisation du Département.

**French 599** H(3-0)

**Études spécialisées de la langue, de la littérature ou de la culture**

Séminaire sur des questions d'actualité ayant trait à la langue, à la littérature ou à la culture au sens large. Exemples de sujets traités: la littérature française du Moyen-Âge, l'autobiographie, l'écriture des femmes de langue française, le créole dans les écrits de langue française, etc.

**Préalables:** Trois demi-cours de français de niveau 400, ou autorisation du Département.

**MAY BE REPEATED FOR CREDIT**

**Graduate Courses**

(Dans certaines circonstances, les cours de niveau 500 pourront être crédités dans le cadre du programme des études supérieures.)

(Only where appropriate to a student's programme may graduate credit be received for courses numbered 500-599.)

**French 605** H(3-0)

**Problématiques littéraires et culturelles**

**MAY BE REPEATED FOR CREDIT**

**French 611** H(3-0)

**Langue française**

**MAY BE REPEATED FOR CREDIT**

**French 615** H(3-0)

**Images, textes, performance**

**MAY BE REPEATED FOR CREDIT**

**French 625** H(3-0)

**Études cinématographiques**

**MAY BE REPEATED FOR CREDIT**

**French 635** H(3-0)

**Le texte narratif**

**MAY BE REPEATED FOR CREDIT**

**French 641** H(3-0)

**Littérature et culture avant 1800**

**MAY BE REPEATED FOR CREDIT**

**French 645** H(3-0)

**La Modernité**

**MAY BE REPEATED FOR CREDIT**

**French 655** H(3-0)

**Francophonies**

**MAY BE REPEATED FOR CREDIT**

**French 665** H(3-0)

**Études postcoloniales**

**MAY BE REPEATED FOR CREDIT**

**French 675** H(3-0)

**Féminismes et Gender**

**MAY BE REPEATED FOR CREDIT**

**French 685** H(3-0)

**Voix québécoises et canadiennes**

**MAY BE REPEATED FOR CREDIT**

**French 691** H(3-0)

**Autour d'un auteur**

**MAY BE REPEATED FOR CREDIT**

**French 695** H(3-0)

**Profession et recherche**

**MAY BE REPEATED FOR CREDIT**

**French 699** H(3-0)

**Thèmes spéciaux**

**MAY BE REPEATED FOR CREDIT**