SÉANCE D'INFO

DÉPARTEMENT DE PHYSIQUE

- Présentation du département
- Les Programmes offerts
- Bourses et occasions de recherche
- Options CO-OP et C-EDGE
- Carrières
- Ressources intéressantes
- Venez nous rencontrer
- Questions!

PRÉSENTATION DU DÉPARTEMENT

Navette entre les campus

link

PERSONNES À CONNAITRE

Dr. Laszlo Kalman

Directeur des programmes de 1er cycle et de l'option Co-op

Bureau: SP-365.10

laszlo.kalman@concordia.ca

Nata Zazubovits (M.Sc.)

Coordonnatrice au 1er cycle et conseillère pédagogique

Bureau: SP-367.01

physics-advising@concordia.ca

- Prenez rendez-vous sur ZOOM
- Prenez rendez-vous en personne

Dr. Valter Zazubovits

Directeur du département

Bureau: SP-367.03

valter.zazubovits@concordia.ca

Patrick Doane

Coordonateur des laboratoires

Bureau: SP 265.01

patrick.doane@concordia.ca

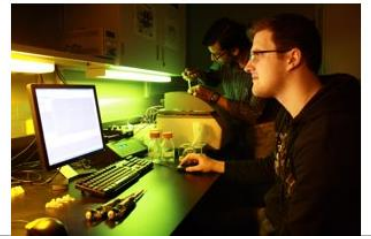
NOS ESPACES

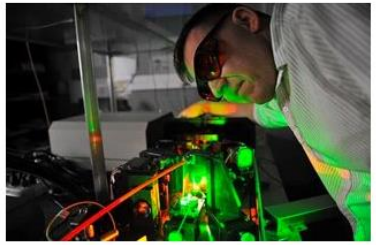
Pavillon des Sciences, 3e étage

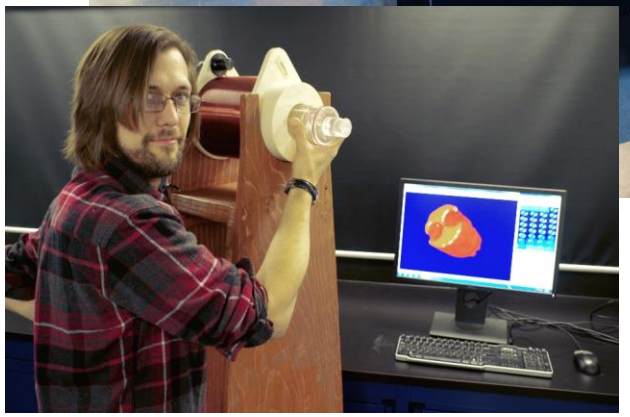
- Bureaux des profs / étudiants gradués
- Salle d'étude BSc
- Cuisinette

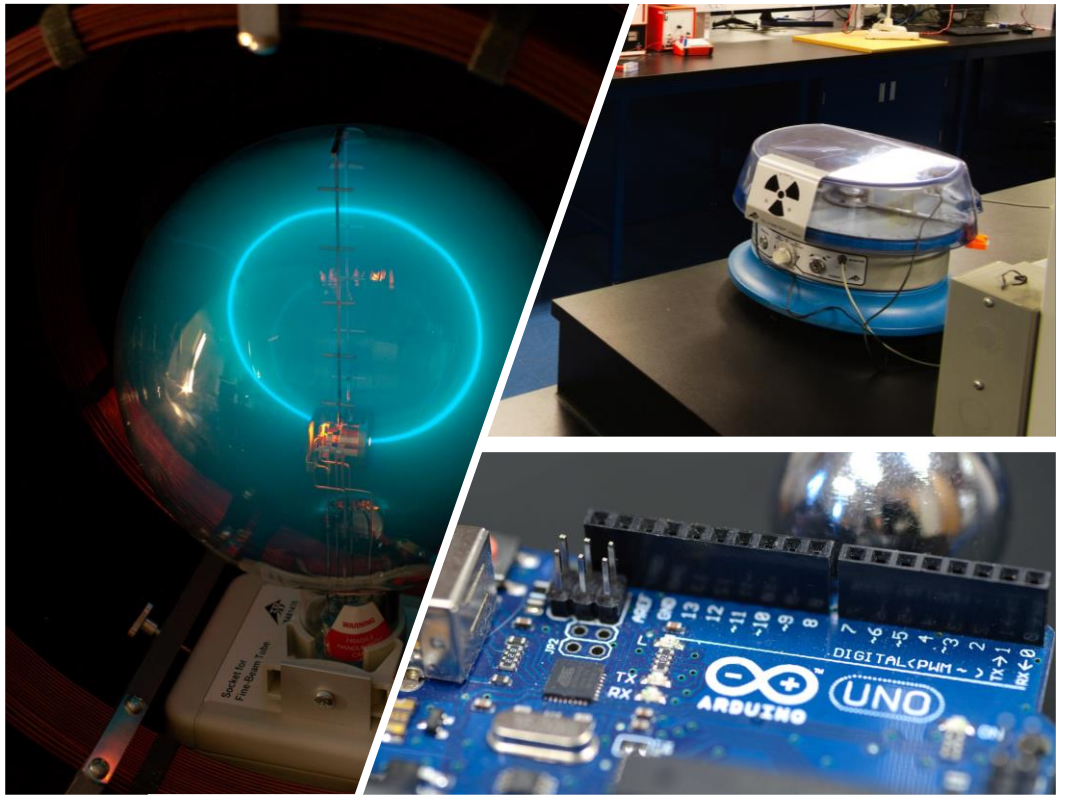
Labos de recherche

- Pavillon SP, sous-sol, 3e et 5e étage
- Centre PERFORM, Pavillon Science HUB









NOS ESPACES/
LABOS D'ENSEIGNEMENT

PROGRAMMES

- MAJEUR EN PHYSIQUE

  45 crédits

  Majeur additionnel possible. Ex.: Math

- BSc. SPÉCIALISÉ OU « HONOURS » EN PHYSIQUE

  66 crédits

  Mineur additionnel possible. Ex.: Biologie, Chimie, Journalisme Scientifique

  - OPTION PHYSIQUE

    Axé sur la Physique moderne: quantique, nano, particules, astrophysique, optique non-linéaire.

  - OPTION BIOPHYSIQUE

    Axé sur les applications de la physique dans les domaines biologiques: physique médicales (IRM, médecine nucléaire, scans corporels), étude de systèmes biologiques, participation à des découvertes médicales.

UNDERGRADUATE CALENDAR

Recherchez « Undergraduate calendar »

SÉQUENCE DE COURS / BSC

Specialization, Opt A (66 credits) FALL ENTRY

	FALL	PRE-RECS	CO-RECS		WINTER	PRE-RECS	CO-RECS
YEAR 1	MAST 218 Multivariable Calculus I (3.00)	MATH 204, MATH 205		YEAR 1	MAST 219 Multivariable Calculus II (3.00)	MAST 218	
	PHYS 230 Experimental Physics I (3.00)	PHYS 204-206, PHYS 224-			PHYS 236 Numerical Methods in Physics with Python (3.0	MATH 204, MATH 205	
	PHYS 252 Optics (3.00)	PHYS 206			PHYS 245 Classical Mechanics (3.00)	MATH 204, MATH 205	
	Elective (3.00)				Elective (3.00)		
YEAR 2	PHYS 232 Methods of Theoretical Physics I (3.00)		MAST 218	YEAR 2	PHYS 367 Modern Physicics and Relativity (3.00)	PHYS 205, PHYS	
	PHYS 253 Electricity and Magnetism I (3.00)	PHYS 205	MAST 218		PHYS 335 Methods of Theoretical Physics II (3.00)	PHYS 232	MAST 219
	PHYS 334 Thermodynamics (3.00)	PHYS 204, MAST 21	MAST 219		PHYS 354 Electricity and Magnetism II (3.00)	PHYS 253	MAST 219
	Elective (3.00)				Elective (3.00)		
	*PHYS 230 and PHYS 330 (3.00) can be taken during Fall, Winter or **Summer** terms*						
YEAR 3	PHYS 377 Quantum Mechanics I (3.00)	PHYS 206		YEAR 3	PHYS 435 Statistical Physics (3.00)	PHYS 334, PHYS	
	PHYS 345 Advanced Classical Mechanics (3.00)	PHYS 232, PHYS 245 MAST 219			PHYS 478 Quantum Mechanics II (3.00)	PHYS 377	
	PHYS 330 Experimental Physics II (3.00)	PHYS 230			Elective (3.00)		
	Elective (3.00)				Elective (3.00)		
	*PHYS 497 Specialization Research Project (3.00) can be taken during Fall, Winter or **Summer** terms*						
YEAR 4	PHYS 459 Condensed Matter Physics I (3.00)	PHYS 377		YEAR 4	PHYS 468 Condensed Matter Physics II (3.00)	PHYS 459	PHYS 478
	PHYS 355 Electronics (3.00)	PHYS 205			PHYS 497 Specialization Research Project (3.00)		
	Recommended PHYS 3 credits OR Elective (3.00)				Recommended PHYS 3 credits (if not taken during Fall) OR Elective (3.00)		

Recommended PHYS 3 credits for FALL:	PRE-RECS	CO-RECS
PHYS 440 Computational Methods in Physics with Python (3.00)	PHYS 236, PHYS 335, PHYS 377	
PHYS 443 Quantitative Human Systems Physiology (3.00)	45 credits	

Recommended PHYS 3 credits for WINTER:	PRE-RECS	CO-RECS
PHYS 385 Astrophysics	PHYS 206	
PHYS 445 Principles of Medical Imaging (3.00)	45 credits	
PHYS 498 Advanced Topics in Physics (3.00)	PHYS 478	

CORE PHYSICS (42)

6 credits

- MAST 218 Multivariable Calculus I (3.00)
- MAST 219 Multivariable Calculus II (3.00)

36 credits:

- PHYS 230 Experimental Physics I (3.00)
- PHYS 232 Methods of Theoretical Physics I (3.00)
- PHYS 236 Numerical Methods in Physics with Python (3.00)
- PHYS 245 Classical Mechanics (3.00)
- PHYS 252 Optics (3.00)
- PHYS 253 Electricity and Magnetism I (3.00)
- PHYS 334 Thermodynamics (3.00)
- PHYS 335 Methods of Theoretical Physics II (3.00)
- PHYS 354 Electricity and Magnetism II (3.00)
- PHYS 367 Modern Physicics and Relativity (3.00)
- PHYS 377 Quantum Mechanics I (3.00)
- PHYS 435 Statistical Physics (3.00)

All courses exept MAST 218. MAST 219, PHYS 230, PHYS 330 and PHYS 497 are offered once per year

66 BSc Specialization in Physics

42 Core Program

21 PHYS 330, 345, 355, 459, 468, 478, 497

3 Chosen from PHYS 370, 436, 440, 443, 445, 458, 498

Total: 90 credits program = **66 + 24**

66 Spec in Physics

24 = electives outside of Physics (**6** outside of **Sciences**)

Sciences:

- Department of Biology
- Department of Chemistry and Biochemistry
- Department of Health, Kinesiology, and Applied Physiology
- Department of Mathematics and Statistics
- Department of Physics
- Department of Psychology
- Science College

All courses exept MAST 218. MAST 219, PHYS 230, PHYS 330 and PHYS 497 are offered once per year

SÉQUENCE DE COURS / MAJEUR

MAJOR (42+3 credits) FALL ENTRY

	FALL	PRE-RECS	CO-RECS		WINTER	PRE-RECS	CO-RECS
YEAR 1	**MAST 218 Multivariable Calculus I (3.00)**	MATH 204 MATH 205		YEAR 1	**MAST 219 Multivariable Calculus II (3.00)**	MAST 218	
	PHYS 230 Experimental Physics I (3.00)	206, PHYS 224-226; or equivalent			**PHYS 236 Numerical Methods in Physics with Python (3.0**	MATH 204, MATH 205	
	PHYS 252 Optics (3.00)	PHYS 206			**PHYS 245 Classical Mechanics (3.00)**	MATH 204, MATH 205	
	Elective (3.00)				Elective (3.00)		
YEAR 2	**PHYS 232 Methods of Theoretical Physics I (3.00)**		MAST 218	YEAR 2	**PHYS 367 Modern Physicics and Relativity (3.00)**	PHYS 205, PHYS 206	
	PHYS 253 Electricity and Magnetism I (3.00)	PHYS 205	MAST 218		**PHYS 335 Methods of Theoretical Physics II (3.00)**	PHYS 232	MAST 219
	PHYS 334 Thermodynamics (3.00)	PHYS 204, MAST 218	MAST		**PHYS 354 Electricity and Magnetism II (3.00)**	PHYS 253	MAST 219
	Elective (3.00)				Elective (3.00)		
	PHYS 230 (3.00) can be taken during Fall, Winter or Summer term						
YEAR 3	**PHYS 377 Quantum Mechanics I (3.00)**	PHYS 206		YEAR 3	**PHYS 435 Statistical Physics (3.00)**	PHYS 334, PHYS 367	
	PHYSICS 3 credit of PHYS, see recommendation (3:00)				Elective (3.00)		
	Elective (3.00)				Elective (3.00)		
	Elective (3.00)				Elective (3.00)		
YEAR 4	Elective (3.00)			YEAR 4	Elective (3.00)		
	Elective (3.00)				Elective (3.00)		
	Elective (3.00)				Elective (3.00)		

Recommended PHYS electives for FALL:	PRE-RECS	CO-RECS
PHYS 284 Introduction to Astronomy (3.00)	cannot go towards concentration	
PHYS 330 Experimental Physics II (3.00)	PHYS 230	
PHYS 345 Advanced Classical Mechanics (3.00)	PHYS 232, PHYS 245, MAST 219	
PHYS 355 Electronics (3.00)	PHYS 205	
PHYS 440 Computational Methods in Physics with Python (3.00)	PHYS 236, PHYS 335, PHYS 377	
PHYS 443 Quantitative Human Systems Physiology (3.00)		
PHYS 459 Condensed Matter Physics I (3.00)	PHYS 377	

Recommended PHYS electives for WINTER:	PRE-RECS	CO-RECS
PHYS 260 Introductory Biophysics (3.00)	201; CHEM 205; MATH 203; PHYS 204-	
PHYS 330 Experimental Physics II (3.00)	PHYS 230	
PHYS 385 Astrophysics	PHYS 206	
PHYS 445 Principles of Medical Imaging (3.00)		
PHYS 460 Chemical Aspects of Biophysics (3.0)	PHYS 253	PHYS 334
PHYS 468 Condensed Matter and Nanophysics	PHYS 459	PHYS 478
PHYS 478 Quantum Mechanics II (3.00)	PHYS 377	
PHYS 498 Advanced Topics in Physics (3.00)	PHYS 478	

CORE PHYSICS (42)
6 credits
MAST 218 Multivariable Calculus I (3.00)
MAST 219 Multivariable Calculus II (3.00)
36 credits:
PHYS 230 Experimental Physics I (3.00)
PHYS 232 Methods of Theoretical Physics I (3.00)
PHYS 236 Numerical Methods in Physics with Python (3.00)
PHYS 245 Classical Mechanics (3.00)
PHYS 252 Optics (3.00)
PHYS 253 Electricity and Magnetism I (3.00)
PHYS 334 Thermodynamics (3.00)
PHYS 335 Methods of Theoretical Physics II (3.00)
PHYS 354 Electricity and Magnetism II (3.00)
PHYS 367 Modern Physicics and Relativity (3.00)
PHYS 377 Quantum Mechanics I (3.00)
PHYS 435 Statistical Physics (3.00)

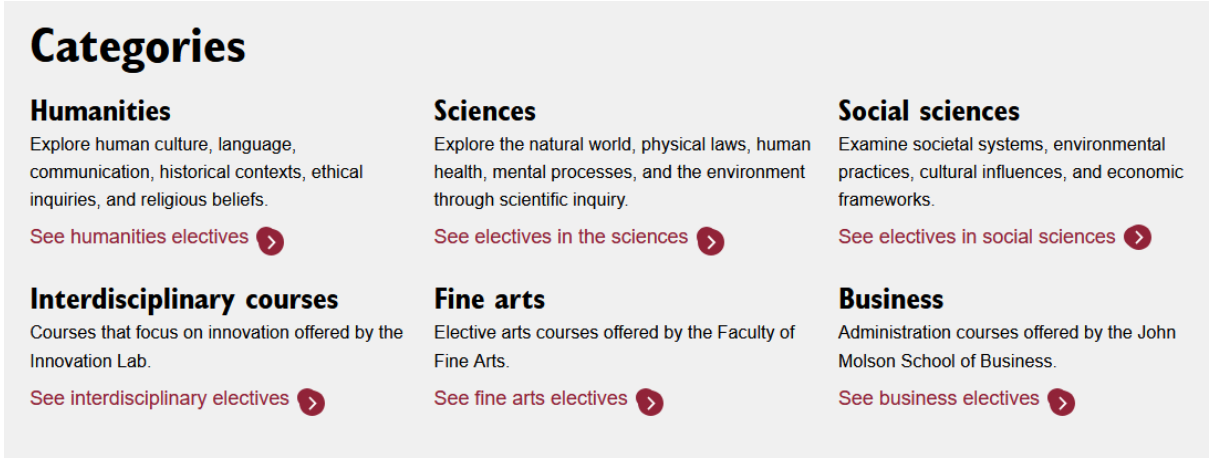
All courses exept MAST 218, MAST 219, PHYS 230, PHYS 330 and PHYS 497 are offered once per year

45 BSc Major in Physics
42 Core Program
3 Chosen from PHYS electives
Total: 90 credits program = **45 of BSc Major + (24 + 21) of Electives**
24 = Electives outside of Physics, including **6** outside of **Sciences**
21 = Electives, can be Physics (if you are taking a lot of Physics electives, concider switching to Specialization)
Sciences:
Department of Biology,
Department of Chemistry and Biochemistry
Department of Health, Kinesiology, and Applied Physiology
Department of Mathematics and Statistics
Department of Physics
Department of Psychology

45 BSc Major in Physics
42 Core Program
3 Chosen from PHYS electives
Total: 90 credits program = **45 of BSc Major + (24 + 21) of Electives**
24 = Electives outside of Physics, including **6** outside of **Sciences**
21 = Electives, can be Physics (if you are taking a lot of Physics electives, concider switching to Specialization)

COURS AU CHOIX

- Cours au choix



Categories

Humanities
Explore human culture, language, communication, historical contexts, ethical inquiries, and religious beliefs.
See humanities electives

Sciences
Explore the natural world, physical laws, human health, mental processes, and the environment through scientific inquiry.
See electives in the sciences

Social sciences
Examine societal systems, environmental practices, cultural influences, and economic frameworks.
See electives in social sciences

Interdisciplinary courses
Courses that focus on innovation offered by the Innovation Lab.
See interdisciplinary electives

Fine arts
Elective arts courses offered by the Faculty of Fine Arts.
See fine arts electives

Business
Administration courses offered by the John Molson School of Business.
See business electives

- Cours au choix en ligne
  EConcordia

- Pour les cours en Ingénierie ou en Informatique, Voir ICI

POSSIBILITÉS DE RECHERCHE

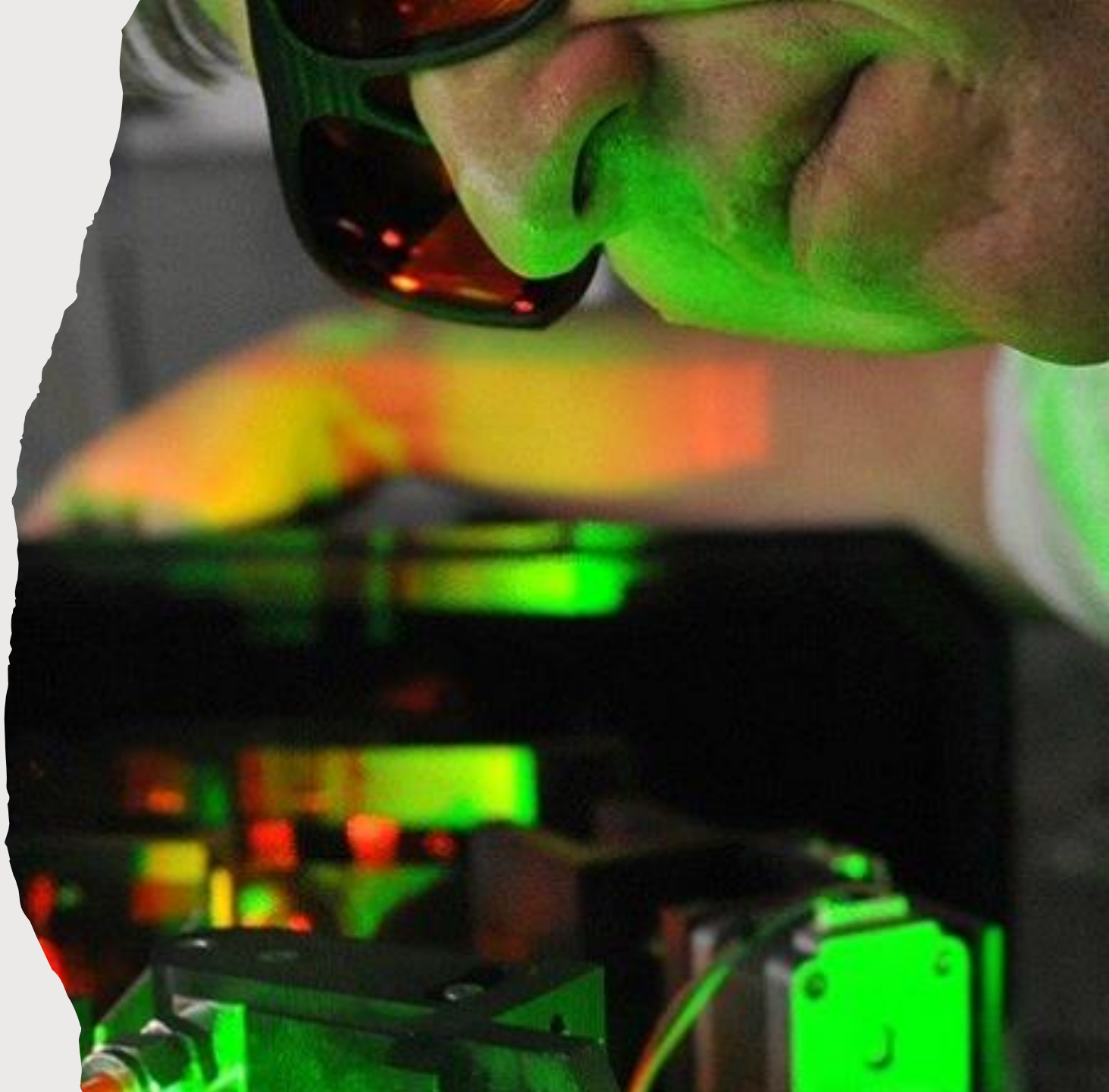
Cours de recherche:

PHYS 289, 389, 496/497

Recherche au département

Bourses externes et internes

Science college



PRIX POUR ÉTUDIANTS DE 1ER CYCLE

- Un prix pour étudiant(e) 1ère année: 1500$
- Un prix pour étudiant(e) 2e année: 1500$
- Un prix pour étudiant(e) 3e année: 1500$
- Divers prix offerts par nos donateurs (Marlene Pring, Mukerji & Upreti, Taubi W. Landsberger)
- Bourses de recherche pour stage d'été au 1er cycle
  - Une bourse de stage recherche d'été du département de Physique
  - Bourses de stage recherche d'été CUSRA (Concordia)
  - Bourses de stage recherche d'été CRSNG (Gouvernement fédéral)

PROGRAMMES DE STAGES:

CO-OP

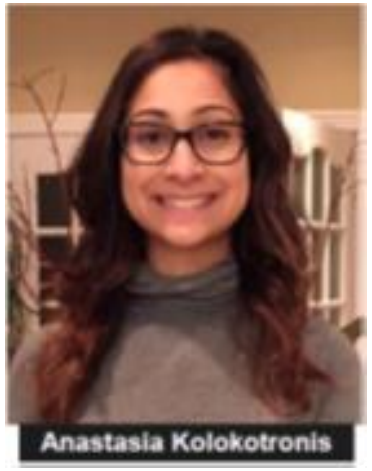
Combiner études et expérience de travail

- Trois stages payés d'une session chaque
- Ateliers d'écriture de CV et de recherche d'emploi
- Notes minimales requises / planification de la séquence de cours et stages.
- Voir: Institute for Co-operative Education

EXEMPLES D'ÉTUDIANTS CO-OP

Mariya Krasteva
Stages Co-op:
McGill Space Institute
Presto Heinrich-Heine-Universität
Agence Spatiale Européenne
https://nl.linkedin.com/in/mariya-krasteva
Maintenant: CNES PhD en optique pour les sciences planétaires

Anastasia Kolokotronis
Stages Co-op:
Centre PERFORM,
Agilent Technologies
https://ca.linkedin.com/in/anastasia-kolokotronis-649747a8
Maintenant: Physicienne médicale, Hôpital Maisonneuve-Rosemont



PROGRAMMES DE STAGES:

C-EDGE

Une ou deux sessions de stages

- Moins de restrictions
- Ateliers d'écriture de CV et de recherche d'emploi
- Voir: Institute for Co-operative Education

EMPLOIS ÉTUDIANTS

- Tutorat en Physique ou en Math
- Assistant dans un laboratoire de recherche (payé ou bénévole)
- Programme Co-op

POSSIBILITÉS DE CARRIÈRE (LIEN)

- Secteur Académique / Recherche en Physique
- Enseignement de niveau CÉGEP
- Modélisation, simulations, prédictions (ex.: domaine financier, modèles atmosphériques, …)
- Expert en données (data scientist)
- Industrie des jeux vidéos (simulations)
- Industrie aérospatiale (ex.: développer des simulateurs de vols)
- Recherche et développement – haute technologie (ex.: création de senseurs, d'équipement médical, etc.)
- Physique médicale

Grafoid

Group NanoXplore

- Raymor

Medical/Healthcare

- Hexoskin
- Muse
- Verily

Optics and Photonics

- ASEA Brown Boveri (ABB)
- Avalon Holographics

- IBM
- Google
- Huawei Canada
- Microsoft
- Nuance Communications
- Optiwave Systems
- Ranovus

Telecommunication

- Bell Canada
- Ciena
- EXFO
- Keysight Technologies
- MPB Communications

Technology

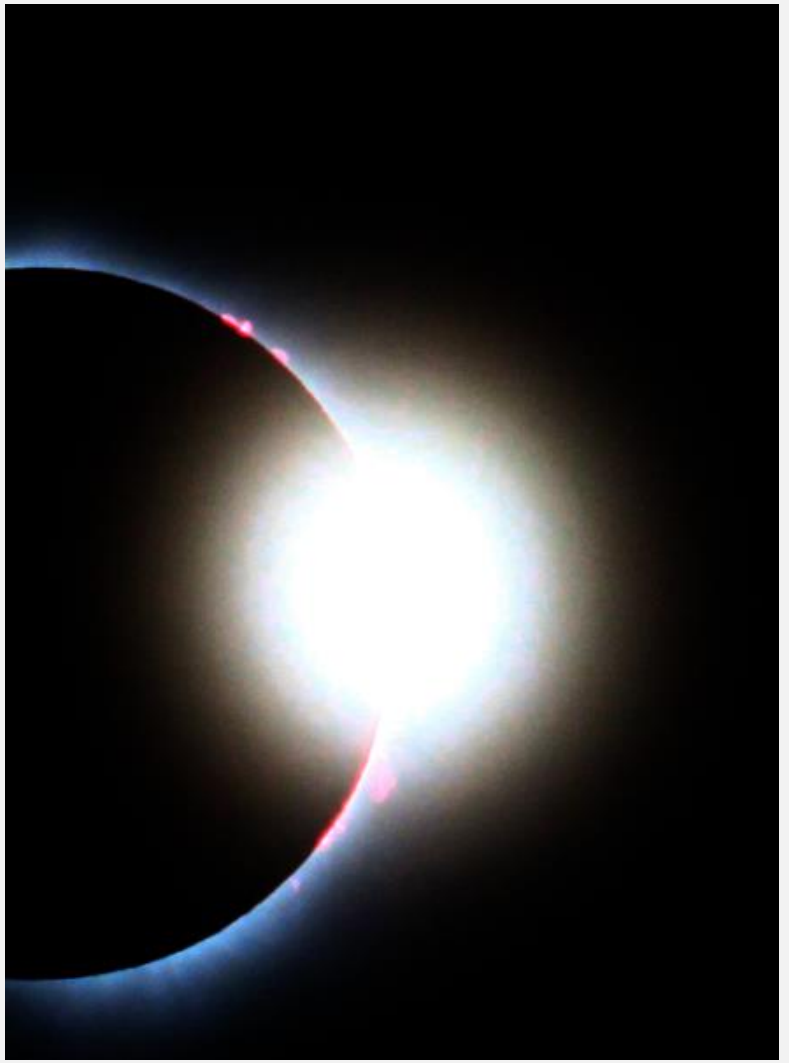
CARRIÈRES EN PHYSIQUE

- **Excellente conférence sur les carrières en physique**

2019 Career Trajectories Keynote: The Real Story About Employment for Physics Graduates - YouTube

UNE COMMUNAUTÉ ACCUEILLANTE

- Club de physique GOPHER
- Rencontre mensuelle (thé) / femmes et personnes LGBTQ+ en physique
- Mentora par les pairs
- Événement de mentorat par des personnes ressource de divers secteurs
- SPACE Concordia
- Association étudiante CUBCAPS
- DISCORD des étudiants: à utiliser absolument



SERVICES DE CONCORDIA

- Student Success Centre
- Student Hub
- Students Services
- Zen Dens
- Future Bounds
- Services de conseils en orientation
- CU off-campus housing
- Concordia student union / CUBCAPS
- Services psychologiques
- Centre LIVE (bénévolat)
- Navigator program/welcome crew
- Services de santé
- Recreation and athletics

UN DÉPARTEMENT INCLUSIF

- Nous sommes un département avec une diversité grandissante
- Toute personne qui a une passion pour la physique est bienvenue et mérite notre plus grand respect, peu importe son genre, son orientation sexuelle, son ethnicité, sa religion, son âge ou sa situation de handicap

Ressources:

Queer Concordia

Aboriginal Student Resource Centre

Multi-Faith and Spirituality Centre

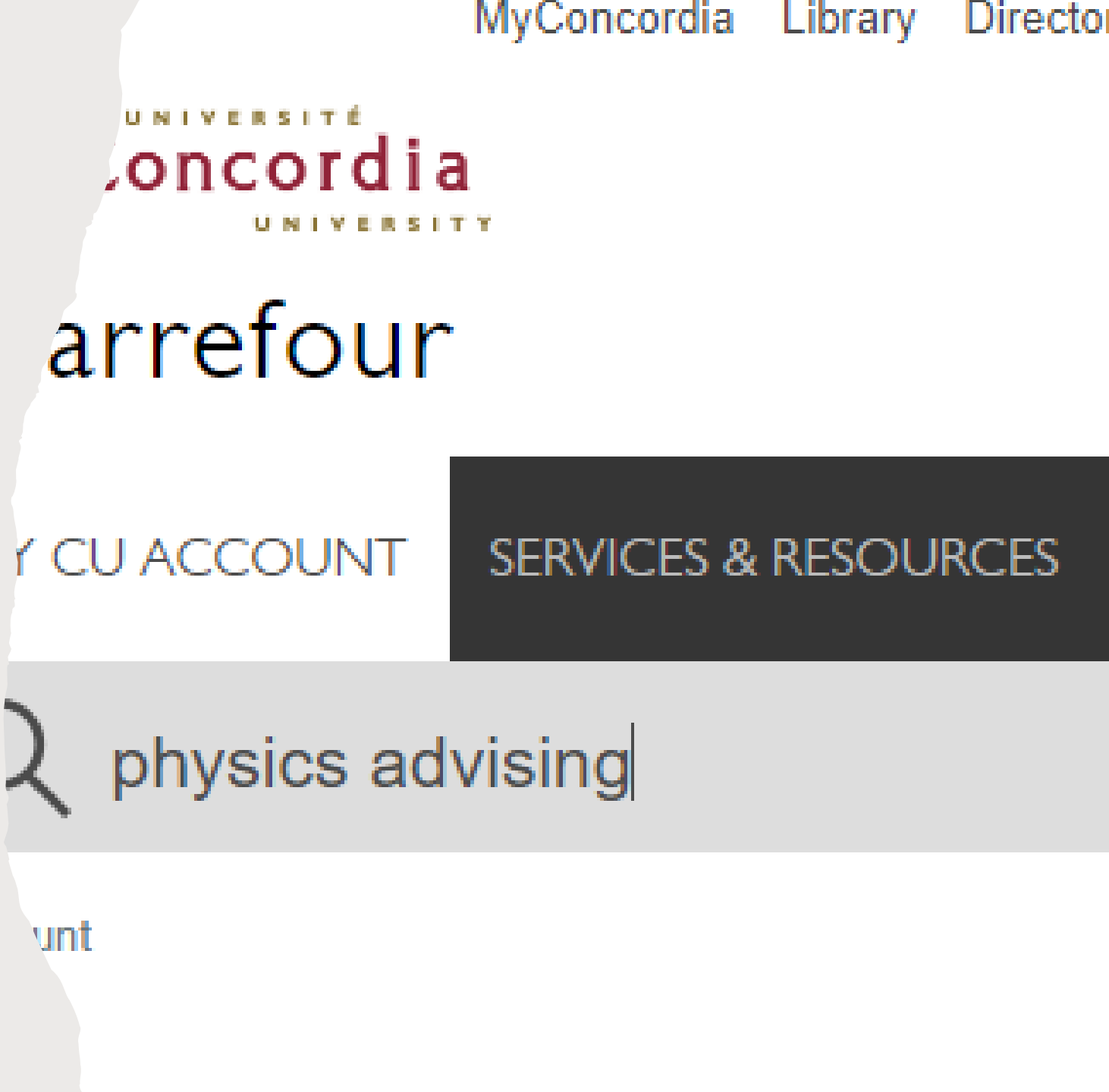
Access Centre for Students with Disabilities

Accédez à la présentation

Organisez une rencontre avec notre conseillère aux étudiants

PAR ZOOM

EN PERSONNE



MERCI

Questions!