DATA SCIENCE & HEALTH 2020

NOVEMBER 3, 2020
LIVE ON ZOOM // COMPANION MATERIAL ON CANVAS

UBC DEPARTMENT OF MEDICINE
CONTINUING PROFESSIONAL DEVELOPMENT EVENT
7.5 MOC1/Mainpro+ credits

WWW.MEDICINE.MED.UBC.CA/DATASCIENCE/E
PROGRAM OVERVIEW
We are excited to welcome you to the UBC Department of Medicine’s newest Continuing Professional Development course, focused on the intersection between Data Science and Health. As a result of attending this program you will be able to demonstrate an understanding of current data science concepts as related to health care research and delivery. The program will provide attendees fluency in data science terminology to enable engagement and collaboration with data scientists, as well as a practical roadmap for developing and executing data science research projects.

ACCREDITATION STATEMENT
The University of British Columbia Division of Continuing Professional Development (UBC CPD) is fully accredited by the Committee on Accreditation of Continuing Medical Education (CACME) to provide study credits for continuing medical education for physicians. This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada, and has been approved by UBC CPD for up to 7.5 MOC Section 1 Group Learning credits. This program meets the certification criteria of the College of Family Physicians of Canada and has been certified by UBC CPD for up to 7.5 Mainpro+ Group Learning credits. Each physician should claim only those credits accrued through participation in the activity.

SCIENTIFIC PLANNING COMMITTEE
Thalia Field, MD, MHSc, FRCPC
Assistant Professor, Division of Neurology, UBC Department of Medicine

Kendall Ho, MD, FRCPC
Professor, UBC Department of Emergency Medicine

Marianne Ho-Asjoe, MD, CCFP
Family Physician

Rich Lester, MD, FRCPC
Associate Professor, Division of Infectious Diseases, UBC Department of Medicine

Anita Palepu, MD, MPH, FRCPC, MACP
Head, UBC Department of Medicine; Professor, Division of General Internal Medicine, UBC Department of Medicine

Tricia Tang, PhD, RPsych
Director, Experimental Medicine Graduate Program; Associate Professor, Division of Endocrinology & Metabolism, UBC Department of Medicine

Teresa Tsang, MD, FRCPC, FACC, FASE
Associate Head, Research, UBC Department of Medicine; Professor, Division of Cardiology, UBC Department of Medicine
PROGRAM DETAILS

PROGRAM STRUCTURE
In light of ongoing pandemic mitigation measures we have designed this course to be delivered virtually. Our shared experiences of virtual conferences to-date have shown that Zoom is an excellent tool for enabling vibrant discussions. To maximize the opportunities for interaction we have focused our live Zoom event on two keynote presentations, panel discussions with experts, and opportunities for participants to ask questions. All supporting lectures will be delivered through the online learning platform, Canvas, to allow self-paced learning and self-evaluation, as well as ongoing access to resources, discussion boards, and a community of learners. To build momentum in our community, and help the transition from learning about data science to doing data science, we have partnered with the Faculty of Applied Science to develop an ongoing workshop series focused on building collaborative research partnerships between clinicians and data scientists.

1 year
Online access to materials on Canvas

Nov 3, 2020
Interactive discussions on Zoom

Winter 2020/1
Access to hands-on workshops with data scientists

Step 1
Learn all about data science from the ground up, and explore health research and delivery applications with UBC experts at your own pace on Canvas

Step 2
Bring your questions and join your peers for a quick review, expert panel discussions, breakout rooms, and keynotes, all live on Zoom

Step 3
Keep the momentum going by joining our workshop series. Partner with engineers to apply what you've learned and move your data science project forward.
0// WELCOME + PERSPECTIVES
PRESIDENT SANTA ONO
The intersection of data science and health, tech, and society, and how UBC is shaping this new paradigm.

1// DATA SCIENCE: WHAT IS IT?
Dr. Raymond Ng, Director of Data Science Institute/Founder MDS +
Dr. Ehsan Karim, Professor and Data Scientist, School of Population and Public Health, UBC

Basics of Data Science
Introduction and broad overview, terminology, impact, and applications in health research and clinical care.
- Artificial Intelligence
- Machine Learning
- Deep Learning
- Natural Language/Signal/Image Processing
- Algorithms

2// DATA SCIENCE: HOW DO YOU DO IT?
Dr. Tiffany Timbers, Professor, MDS, UBC + Dr. Mike Gelbart, Professor, MDS, UBC

Basics of Statistics
Basics of Programming
- Orientation to R and Python
- Data structures
- Iteration
- Flow control
- Program design relevant to data exploration and analysis

Algorithms and Data Structures:
- How to choose appropriate approaches to solve data science problems

Accessing Computing Resources:
- Compute Canada, UBC ARC Sockeye, UBC Cloud Innovation Centre

3// DATA SCIENCE: HOW DO YOU SPEAK THE LANGUAGE?
Dr. Firas Moosvi, Professor MDS, UBC

Learn how data scientists
- Present and interpret data science findings
- Write, speak, and think, so you can build effective collaborations

4// DATA SCIENCE: HOW DO YOU USE IT IN HEALTH RESEARCH?
Applications in Cognition
Dr. Thalia Field, Division of Neurology, Department of Medicine, UBC

Artificial Intelligence in Echocardiology
Dr. Teresa Tsang, Division of Cardiology, Department of Medicine, UBC

MS, MRI, and Deep Learning
Dr. Roger Tam, Department of Radiology, UBC

Emergency Medicine and Digital Health
Dr. Kendall Ho, Department of Emergency Medicine, UBC

Applications in Personalized Oncogenomics
Dr. Marco Marra, Department of Medical Genetics, UBC

5// DATA SCIENCE: HEALTH RESEARCH AND INNOVATION
BC Digital Supercluster
Dr. Evgueni Lóukipoudis

Digital Innovation Science: Funding Strategies and Partnership Opportunities
Dr. Tibor van Rooij

WelTel: A Case Study in Innovation
Dr. Richard Lester

MetaOptima: A Case Study in Innovation
Dr. Maryam Sadeghi

6// DATA SCIENCE: HEALTH DATA MANAGEMENT AND DELIVERY
Federated Learning: Privacy in the Era of Big Data and Artificial Intelligence
Dr. Aline Talhouk

The Role of Data Analytics in Health Care: Perspectives and Future Directions
Dr. Diane Gutw

PopDataBC: Leveraging administrative data for health research
Dr. Kim McGrail
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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>11:45 AM</td>
<td>ZOOM REGISTRATION BEGINS</td>
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<tr>
<td>12:00 PM</td>
<td>OPENING REMARKS</td>
<td>Dr. Anita Palepu, Head, UBC Department of Medicine</td>
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<td>12:05 PM</td>
<td>KEYNOTE + DISCUSSION: MOVING RESEARCH TO THE BEDSIDE</td>
<td>Dr. Douglas Kingsford, Chief Medical Informatics Officer, BC Ministry of Health</td>
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<td>12:30 PM</td>
<td>DATA SCIENCE BASICS REVIEW</td>
<td>Moderator, Highlights of topics covered in depth on Canvas</td>
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<td>12:40 PM</td>
<td>Q&amp;A WITH PANEL DISCUSSION</td>
<td>Dr. Raymond Ng, Director of Data Science Institute/Founder MDS + Dr. Ehsan Karim, Professor and Data Scientist, SPPH, UBC Dr. Tiffany Timbers, Professor, MDS, UBC Dr. Mike Gelbart, Professor, MDS, UBC Dr. Firas Moosvi, Professor MDS, UBC</td>
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<td>AMA with UBC experts</td>
<td>Join our moderated discussion and ask your data science-related questions</td>
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<td>1:00 PM</td>
<td>APPLICATIONS IN HEALTH REVIEW</td>
<td>Moderator, Highlights of topics covered in depth on Canvas</td>
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<td>1:10 PM</td>
<td>Q&amp;A WITH PANEL DISCUSSION</td>
<td>Dr. Thalia Field, Division of Neurology, Department of Medicine, UBC Dr. Teresa Tsang, Division of Cardiology, Department of Medicine, UBC Dr. Roger Tam, Department of Radiology, UBC Dr. Kendall Ho, Department of Emergency Medicine, UBC Dr. Marco Marra, Department of Medical Genetics, UBC</td>
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<td>AMA with UBC experts</td>
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<td>01:30 PM</td>
<td>ZOOM BREAK</td>
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<tr>
<td>01:45 PM</td>
<td>BREAKOUT SESSIONS</td>
<td>Data Science in Health Research and Innovation</td>
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<td>Innovation, Funding, Partnerships Panel and Canvas Highlights</td>
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<td>BC Digital Supercluster // Dr. Evgeni Loukipoudis Digital Innovation // Dr. Tibor van Rooij MetaOptima // Dr. Maryam Sadeghi WelTel // Dr. Rich Lester</td>
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<td>02:30 PM</td>
<td>KEYNOTE + DISCUSSION: AI, ANALYTICS, AND DATA SCIENCE IN HEALTHCARE</td>
<td>Dr. Helia Mohammadni, Chief Data Scientist, Canadian National Healthcare, Microsoft</td>
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<td>02:55 PM</td>
<td>CONCLUDING REMARKS</td>
<td>Dean Dermot Kelleher, What data science means for research, education, and clinical care in the UBC Faculty of Medicine.</td>
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## PROGRAM FLOW NEXT STEPS

### DATA SCIENCE AND HEALTH WORKSHOP SERIES

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<tr>
<th>Date</th>
<th>Event Description</th>
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<tr>
<td><strong>DECEMBER 2020</strong></td>
<td><strong>ENGINEERING PERSPECTIVES</strong></td>
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<td>Meet engineers and learn how data science, artificial intelligence, and machine learning have been used to develop solutions in the health care sphere.</td>
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<td><strong>JANUARY 2021</strong></td>
<td><strong>CLINICAL PERSPECTIVES</strong></td>
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<td>Share the clinical challenges you face and get insight on potential data science solutions from a team of engineers focused on health applications.</td>
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<td><strong>JANUARY - JUNE 2021</strong></td>
<td><strong>MONTHLY WORKSHOPS</strong></td>
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<td>Clinicians will be matched with engineers to develop data science solutions to health care challenges. Monthly meetings with mentors and peers will help keep projects on track, enable knowledge sharing, and build collaborative links between our health care and engineering communities. Successful projects will receive grant development support in preparation for internal and external funding opportunities in Fall 2021.</td>
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