Master of Implementation Science
Fundamentals January 9, 2024
Dartmouth Center for Implementation Science
Presented by Duane Compton, Dean Geisel School of Medicine and Jeremiah Brown, Professor of Epidemiology

Approved
Dartmouth Academic Planning Council
August 15, 2022
Center Aims

• Provide an **academic home** for implementation research
• Provide **trainings** in implementation science
• Create **awareness** of the field and its multifaceted applications
• **Expand strategies** used in implementation science beyond medicine
Our Team

Jeremiah Brown, PhD
Director

Kelly Aschbrenner, PhD
Co-Director

Sarah Lord, PhD
Co-Director

Julia Shaw, MPH
Program Manager

Professor with Tenure of Epidemiology
Professor of The Dartmouth Institute
Professor of Biomedical Data Science
Chair, Science of Implementation in Health and Healthcare NIH Study Section

Associate Professor of Psychiatry
Associate Professor of The Dartmouth Institute
Senior Scientist at Dartmouth Health
Director, Center of Excellence at Dartmouth Health
Director, Research Methods Unit, ISCCCE, Harvard University

Associate Professor of Psychiatry
Associate Professor of Biomedical Data Science
Associate Professor of Pediatrics
Director, Dissemination and Implementation Science Core,
Center for Technology and Behavioral Health

Kelly Zrellof ‘26
Implementation Fellow

Vismaya Gopalan ‘27
Women In Science Project
Internal Advisory Board

Duane Compton  Sue Roberts  Margaret Karagas  Steve Bernstein  Marty Bruce  Josh Kim

Provides feedback and input on Center strategies and activities
Implementation Science

Evaluates multilevel factors and processes that influence implementation

Develops and tests strategies to overcome barriers to adoption, integration, and sustainability

Brings evidence-based practice to scale and addresses their underuse
Implementation Science

Multidisciplinary Influences

- Intervention
- Effectiveness/Process
- Research

- Improvement Science
- Adult Education/Learning
- Social Psychology

- Healthcare/Behavioral Economics
- Medical Anthropology
- Organization & Management, Marketing
Center Activities
Engagement

April Kickoff: 80 Attendees
May Inaugural Reception: 75 Attendees
September Fundamentals: 48 Attendees
October Fundamentals: 64 Attendees
October Works in Progress: 15 Attendees
November Fundamentals: 44 Attendees
November Works in Progress: 23 Attendees

~400 Responses to Interest Survey
397 Subscribed Contacts
>40% Email Engagement
643 Unique Meetings
25 Grant Collaborations
109 Unique Seminar Attendees
Learning Opportunities

Fundamentals Series
Monthly on the 2nd Tuesday
12:00-1:00 PM
Virtual

Works in Progress Series
Monthly on the 4th Tuesday
12:00-1:00 PM
In Person & Virtual

Join Our Network
geiselmed.dartmouth.edu/dcis
implementation.science@dartmouth.edu
linkedin.com/company/implementation-science
Possible ImpSci for MaD curriculum and projects, course in fall 2024, and dual degree options

MD 218
This year’s course is intended to build on the concepts mastered and skills acquired during year 1 of the course, with a focus on reinforcing the overarching course perspectives addressed last year. This year’s course will have a smaller footprint than last year; class sessions will provide the opportunity for students to actively engage and wrestle with current challenges in healthcare delivery and population health, applying the capabilities integral to successfully leading change.

The goal of the course is to empower students with the knowledge, capabilities, and commitment to be effective, collaborative problem solvers and change agents, who go on to make a difference in the health of communities and populations and advance the effectiveness and value of healthcare.
Master of Implementation Science
Program Proposal
Master of Implementation Science

**WHY IMPLEMENTATION SCIENCE?**
- Bridges gaps between evidence-base and Practice Innovations & Interventions (I&I)
- Fundamentally new discipline
- Multidisciplinary methods

**WHY NOW?**
- Rapid growth
- Funding opportunities
- Limited program development
- Lag behind peer institution investment
- Training in high demand

**WHY DARTMOUTH?**
- Unique academic environment
- Undergraduate divisions
- Guarini Arts & Sciences
- Thayer Human Centered-Design
- Tuck Organizational Behavior & Operations Management
Market Demand: NIH Funding

Research conducted by both Hanover Research and DCIS indicates robust labor projections and a strong market for implementation science researchers.

NIH Implementation Research Funding by Fiscal Year

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Total Funding</th>
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<tbody>
<tr>
<td>2019</td>
<td>$1,379,403,150</td>
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<tr>
<td>2020</td>
<td>$1,744,512,373</td>
</tr>
<tr>
<td>2022</td>
<td>$2,467,074,843</td>
</tr>
<tr>
<td>2023</td>
<td>$2,601,753,909</td>
</tr>
</tbody>
</table>

★ $2.6 Billion in current-year NIH-funded implementation research (partial year, 2023)

Source: reporter.nih.gov
Search: “implementation research”
Accessed: December 4, 2023
In the following report, Hanover assesses demand for master’s degree programs in implementation science, specifically highlighting demand trends within the New England region and the nation. This report includes an examination of student and labor market demand, and an analysis of ten existing implementation science-related programs.
Market Research for Implementation Science

• Market research indicates that student demand in the nation for the proposed program is outperforming that for all fields.

• Master’s programs report an average annualized growth rate of ~13% (2018 – 2022).

• Nationally, there were nearly 83,000 implementation science-related job postings in the past year.

• Employment for related occupations is projected to grow annually by 9% by 2031.

• Graduates from master’s programs in implementation science-related fields can likely expect positive job prospects at all geographic levels.
## Market Research: Market Comparison

<table>
<thead>
<tr>
<th>University</th>
<th>Program</th>
<th>Department</th>
<th>Applicants</th>
<th>Students per Class</th>
<th>Duration</th>
<th>Tuition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loyola</td>
<td>New program</td>
<td>Healthcare Administration Department</td>
<td>1-year program</td>
<td>$37,000</td>
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<tr>
<td>Yale</td>
<td>School of Public Health</td>
<td>MS, Biostatistics Pathway in Implementation and Prevention Science</td>
<td>11,000 applicants (SPH)</td>
<td>97 students per class</td>
<td>2-year program</td>
<td>$95,000</td>
</tr>
<tr>
<td>Boston</td>
<td>School of Public Health</td>
<td>MS, Translation and Implementation Science</td>
<td>3,200 applicants</td>
<td>40 students per class</td>
<td>16-24 month program</td>
<td>$65,000</td>
</tr>
<tr>
<td>Washington</td>
<td>Department of Global Health</td>
<td>MPH, Global Health Emphasis in Implementation Science</td>
<td>2-year program</td>
<td>R-$47,226</td>
<td>NR-$80,508</td>
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</tbody>
</table>
External Validation

Ross Brownson, PhD
Washington University
Director, Prevention Research Center
PI, Co-Director Implementation Science Center for Cancer Control

Heather Brandt, PhD
St. Jude’s Children’s Research Hospital
Director HPV Cancer Prevention Program
NIH-SIHH Study Section Chair

David Chambers, DPhil
Deputy Director for Implementation Science
Office of the Director in the Division of Cancer Control and Population Sciences (DCCPS)
NIH/NCI
Student Engagement

“Implementation science is the bridge between great ideas and great people ready to use them. This science brings the ‘know’ to the ‘do.’”

– Genevieve Schaefer ’26
Women in Science Project (WISP)

63% of student respondents to WISP survey reported interest or potential interest in implementation science training
Master of Implementation Science (MIS)

Professional Degree (Geisel)
NECHE Accreditation
Fully Online (Synchronous & Asynchronous Learning)
1-year 4-term program with 2-year option
$50,000 ($45,000 with 10% scholarship)

Employment Prospects

> 938,000
Open Implementation Jobs

$70,000 - $200,000
Salary Range

(2022)
Prospective Student Profiles

Tabitha Samiye, BS, MD ‘27
- First-year medical student
- Considering research career
- Looking for: Dual degree

Kara Rodriguez, MD
- Practicing MD
- Pursuing research career
- Looking for: Path to R01

Andrew Zeb, DO
- Associate Medical Director
- Practicing physician on leadership track
- Looking for: Institutional leadership position

Michelle Lee, MD
- Vice President of Value-Based Care
- Looking for: Rigorous training to support leadership role

Kevin Davis, NP
- Experienced advanced practice provider
- Looking for: Career advancement

Pia McKinley, BA
- Implementation Specialist in K-12 education
- Looking for: Applied skills, career advancement

Sam Gallagher, BS
- Research Program Coordinator
- Looking for: Applied skills, career advancement

Emil Sridharan, BS
- Considering applying to MD, DO, or PhD program
- Looking for: Prestigious master’s degree, applied skills
# Courses & Faculty

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Target Faculty</th>
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</thead>
<tbody>
<tr>
<td>Foundations of Implementation Science and Practice</td>
<td>4</td>
<td>Jeremiah Brown (Geisel, Epidemiology), David Chambers (NCI)</td>
</tr>
<tr>
<td>Implementation and De-implementation Strategies</td>
<td>2</td>
<td>Andrew Quanbeck (University of Wisconsin)</td>
</tr>
<tr>
<td>Introduction to Study Designs and Data Analysis</td>
<td>4</td>
<td>Joelle Ferron (Geisel, Psychiatry)</td>
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<tr>
<td>Experimental Designs</td>
<td>2</td>
<td>Robert Brady (Geisel, Psychiatry), Geoffrey Curran, (University of AR)</td>
</tr>
<tr>
<td>Application of Theories, Models, and Frameworks</td>
<td>4</td>
<td>Kelly Aschbrenner (Geisel, Psychiatry), Robert Brady (Geisel, Psychiatry)</td>
</tr>
<tr>
<td>Health Equity-Focused Implementation Science</td>
<td>2</td>
<td>Kelly Aschbrenner (Geisel, Psychiatry)</td>
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<tr>
<td>Qualitative and Mixed methods in Implementation Research</td>
<td>4</td>
<td>TBD: Julia Moore (Center for Implementation), Shani Bardach (Geisel, TDI)</td>
</tr>
<tr>
<td>Measuring Implementation Science Context, Process and Outcomes</td>
<td>2</td>
<td>TBD: Rachel Tabak (Washington University)</td>
</tr>
<tr>
<td>Evidence-Based Interventions: Scaling Up and Scaling Out</td>
<td>4</td>
<td>Sarah Lord (Geisel, Biomedical Data Science)</td>
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<td>User-Centered Design Applied to Interventions and Implementation Strategies</td>
<td>2</td>
<td>Elizabeth Murnane (Thayer)</td>
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<tr>
<td>Evaluation of Experimental Trials</td>
<td>4</td>
<td>Sherry Owens (TYRA)</td>
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<tr>
<td>Industry implementation</td>
<td>2</td>
<td>Stanley Shaw (Harvard)</td>
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<tr>
<td>Fidelity, Adaptation and Sustainment of Evidence-based Interventions</td>
<td>4</td>
<td>Kelly Aschbrenner (Geisel, Psychiatry)</td>
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<tr>
<td>Health Promotion and Policy Programs</td>
<td>2</td>
<td>Sarah Pratt (Geisel, Biomedical Data Science)</td>
</tr>
<tr>
<td>Education, Community-Based Participatory Research, and State Services</td>
<td>2</td>
<td>Yolanda Perkins (NIRN, USC)</td>
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<tr>
<td>Economic Evaluation of Hybrid Implementation Trials</td>
<td>4</td>
<td>Omar Galarraga (Brown University)</td>
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<tr>
<td>Global and Cancer Implementation</td>
<td>2</td>
<td>TBD: Rachel Sturke (Fogarty), Lydia Pace (MGH, Harvard), Gina Kruse (UC)</td>
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<tr>
<td>Behavioral Implementation</td>
<td>2</td>
<td>Sarah Lord (Geisel, Biomedical Data Science)</td>
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## Academic Calendar
### Option for 1- or 2-Year Track

<table>
<thead>
<tr>
<th>Term</th>
<th>Week</th>
<th>Course 1</th>
<th>Course 2</th>
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<tbody>
<tr>
<td>Summer</td>
<td>Week 1</td>
<td>Implementation Science</td>
<td>Introduction to Study Designs and Data Analysis</td>
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<td>Week 7</td>
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<tr>
<td>Summer</td>
<td>Week 8</td>
<td>Implementation and De-implementation Strategies</td>
<td>Experimental Designs</td>
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<td>Week 9</td>
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<td>Week 10</td>
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<tr>
<td>Fall</td>
<td>Week 1</td>
<td>Application of Theories, Models, and Frameworks</td>
<td>Qualitative and Mixed-Methods in Implementation Research</td>
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<td>Winter</td>
<td>Week 1</td>
<td>Evidence-Based Interventions: Scaling up and Scaling out</td>
<td>Evaluation of Experimental Trials</td>
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<td>Winter</td>
<td>Week 8</td>
<td>User-Centered Design Applied to Interventions and Implementation Strategies</td>
<td>Industry Implementation</td>
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<tr>
<td>Spring</td>
<td>Week 1</td>
<td>Fidelity, Adaptation, and Sustainment of Evidence-Based Interventions</td>
<td>Economic Evaluation</td>
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<td>Week 7</td>
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<tr>
<td>Spring</td>
<td>Week 8</td>
<td>Health Promotion Programs OR Education, Community-based participatory research, State services</td>
<td>Cancer Implementation OR Behavioral implementation</td>
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<td>Week 9</td>
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Program Sustainability

**Assumptions:**
- Year 1: Recruitment
- Year 2: 30 students
- Year 3: 40 students
- Year 4: 50 students

**Projections:**
- $3M in new revenue
- Positive annual contribution margin beginning in Year 2
- Sustained contribution margin of >$1M annually beginning in Year 4
Vision

- Net new revenue
- Novel educational program
- Faculty, staff, and student development
- Improved extramural funding
- External, Academic, and Community-based collaboration
- Establish strategic cores and resources

2022
- Stakeholder engagement
- APC
- Survey
- Website
- Networking

2023
- Market Research
- Monthly Training
- Imp Sci Consulting
- R01s, P01s, COBRE
- T32 Grants
- R21/R33 Grant
- Faculty Recruitment

2024
- Market Research
- Monthly Training
- Imp Sci Consulting
- Program Project Grants
- Faculty Recruitment
- Education Ramp-up
- Education Program Hires
- Marketing Recruitment

2025
- Market Research
- Monthly Training
- Imp Sci Consulting
- Program Project Grants
- Faculty Recruitment
- Education Ramp-up
- Education Program Hires
- Marketing Recruitment

2026
- Market Research
- Monthly Training
- Imp Sci Consulting
- Program Project Grants
- Faculty Recruitment
- Education Ramp-up
- Education Program Hires
- Marketing Recruitment

Launch Masters

30 students → 50 students
Discussion