

# Clive Newstead

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## EMPLOYMENT AND EDUCATION

<b>Lecturer</b> , Department of Mathematics, <i>Northwestern University</i>	<i>Sep 2018 – Aug 2021</i>
<b>PhD</b> in Mathematical Sciences (ongoing), <i>Carnegie Mellon University</i>	<i>Aug 2013 – Aug 2018</i>
<b>BA &amp; MMath</b> in Mathematics, <i>University of Cambridge</i>	<i>Oct 2009 – Jun 2013</i>

## TEACHING

*Teaching portfolio available upon request*

### *As course instructor*

Math 300	Foundations of Higher Mathematics, <i>NU</i>	<i>Fall 2018</i>
Math 290-1	Linear Algebra and Multivariable Calculus, <i>NU</i>	<i>Fall 2018</i>
15-151	Mathematical Foundations for Comp. Sci., <i>SAMS program, CMU</i>	<i>Summer 2017</i>
21-127	Concepts of Mathematics, <i>AP/EA program, CMU</i>	<i>Summer 2015</i>
21-256	Multivariate Analysis, <i>CMU</i>	<i>Summer 2015</i>

### *As teaching assistant*

21-128	Mathematical Concepts and Proofs, <i>CMU</i>	<i>Fall 2016</i>
21-128	Mathematical Concepts and Proofs, <i>CMU</i>	<i>Fall 2015</i>
21-259	Calculus in Three Dimensions, <i>CMU</i>	<i>Fall 2014</i>
21-127	Concepts of Mathematics, <i>CMU</i>	<i>Spring 2014</i>
21-120	Differential and Integral Calculus, <i>CMU</i>	<i>Fall 2013</i>

### *Professional development*

Senior Graduate Teaching Fellow, <i>Eberly Center, CMU</i>	<i>Jan 2017 – Aug 2018</i>
Graduate Teaching Fellow, <i>Eberly Center, CMU</i>	<i>Jan 2015 – Dec 2016</i>
Future Faculty Program, <i>Eberly Center, CMU</i>	<i>Apr 2014 – Dec 2015</i>

## TEXTBOOK

*An infinite descent into pure mathematics*. Preprint. Current version: Mar 2018, 398 pages. Accessible at [www.infinitedescent.xyz](http://www.infinitedescent.xyz). Used by myself and 5 other instructors teach 800+ students at Carnegie Mellon since summer 2015.

## AWARDS

University Graduate Student Teaching Award, <i>Carnegie Mellon University</i>	April 2016
Hugh D. Young Teaching Award, <i>Carnegie Mellon University</i>	April 2016
Robinson College Prize and Scholarship, <i>University of Cambridge</i>	July 2012
Crausaz–Wordsworth Essay Prize, <i>University of Cambridge</i>	November 2011
Adrian Knight Prize in Mathematics, <i>University of Cambridge</i>	July 2011

## RESEARCH

My research investigates connections between logic, algebra and topology. Using category theoretic tools, I study algebraic structures arising in dependent type theory, and I am also investigating equivalences between  $\infty$ -categorical models of homotopy type theory.

## PAPERS

Polynomial pseudomonads and dependent type theory. <i>Joint work with Steve Awodey. Preprint: arXiv:1802.00997.</i>	February 2018
Categories of models of homotopy type theory <i>Joint work with Simon Cho, Cory Knapp and Liang Ze Wong.</i>	expt. early 2018

## CONFERENCES AND WORKSHOPS

† indicates conferences where a talk was given

### *Relating to mathematics*

†Homotopy Type Theory MURI meeting, <i>Carnegie Mellon University</i>	March 2018
Joint Mathematics Meeting, <i>San Diego, CA</i>	January 2018
†Category Theory Octoberfest, <i>Carnegie Mellon University</i>	October 2017
AMS MRC Workshop on Homotopy Type Theory, <i>Snowbird, UT</i>	June 2017
†Homotopy Type Theory MURI meeting, <i>Carnegie Mellon University</i>	March 2017
†International Category Theory Conference, <i>Dalhousie University</i>	August 2016
†ASL Logic Colloquium, <i>University of Leeds</i>	August 2016
†Homotopy Type Theory MURI meeting, <i>Carnegie Mellon University</i>	March 2016
Workshop on Homotopy Type Theory, <i>Max Planck Institute for Mathematics</i>	February 2016
†Homotopy Type Theory MURI meeting, <i>Carnegie Mellon University</i>	March 2015
Homotopy Type Theory Workshop, <i>University of Oxford</i>	November 2014
International Category Theory Conference, <i>University of Cambridge</i>	August 2014
†Kan Extension Seminar at CT 2014, <i>University of Cambridge</i>	August 2014

### *Relating to teaching and learning*

Teaching and Learning Summit, <i>Carnegie Mellon University</i>	October 2017
†Teaching and Learning Summit, <i>Carnegie Mellon University</i>	October 2016
†POD Network Conference, <i>San Francisco, CA</i>	November 2015

## OTHER ACTIVITIES AND SKILLS

### *Service on committees*

MCS Graduate Student Advisory Council, <i>Carnegie Mellon University</i>	Jun 2014 – Aug 2018
MCS College Council, <i>Carnegie Mellon University</i>	Aug 2015 – May 2016
Graduate Student Assembly executive board, <i>Carnegie Mellon University</i>	Jun 2015 – Sep 2017
Graduate Student Assembly representative, <i>Carnegie Mellon University</i>	Sep 2013 – May 2015
Board of the Faculty of Mathematics, <i>University of Cambridge</i>	Nov 2011 – Nov 2012
University Library Syndicate, <i>University of Cambridge</i>	Oct 2011 – Oct 2012
Faculty of Mathematics Teaching Committee, <i>University of Cambridge</i>	Oct 2010 – Jun 2013

### *Society memberships*

American Mathematical Society  
Association for Symbolic Logic  
Mathematical Association of America

### *Languages*

English (native), French (advanced), Spanish (basic), Russian (basic)

### *Technology*

Programming and scripting:  $\LaTeX$ , Github, HTML, PHP, CSS, R, Python  
Educational technology: Canvas, Blackboard, Piazza