PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Edward L. Ionides, associate professor of statistics, with tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of statistics, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2001	University of California, Berkeley
M.S.	1995	Cambridge University
B.A.	1994	Cambridge University

Professional Record:

2009 – present	Associate Professor, Department of Statistics, University of Michigan
2002 – 2009	Assistant Professor, Department of Statistics, University of Michigan
2001 – 2003	Visiting Assistant Professor, Department of Statistics, University of Chicago

Summary of Evaluation:

Teaching – Professor Ionides receives very good evaluations for his courses, which are consistently well-organized, rigorous, and methodical. At the same time, he is quite creative and enterprising in trying new topics and approaches to teaching. For instance, he was instrumental in developing and teaching two new graduate level courses in statistics – one course helps students learn and appreciate probability from the perspective of stochastic modeling, and the other serves as a training course in the statistics on responsible conduct in research and scholarship. These courses are essential to the statistics doctoral program. Professor Ionides has graduated three doctoral students to date and is currently advising four doctoral students. He is generous with his time and has been effective at managing his students as they progress toward their degrees. He has also seamlessly integrated his own research with that of his students, and a substantial number of his papers are co-authored with students. His students have taken research positions in industry or tenure-track positions at leading research universities.

Research – Professor Ionides' research interests cover stochastic modeling, computational methods, and their applications. He has significantly advanced statistical inference for applications that involve complex non-linear stochastic differential equations. He has published sixteen journal articles since his promotion in 2009. Taking into account the balance of methodology and application as well as the quality and impact of the work, his productivity has been quite good. His level of funding is also excellent. Since 2008, he has been a principal investigator (PI) on two National Science Foundation (NSF) grants and a co-PI on several other NSF and National Institutes of Health grants. Professor Ionides has conducted substantial interdisciplinary research on measles, malaria, and HIV transmissions, shedding light on important disease dynamics and control issues in a number of contexts. His papers have appeared in top science journals, including *Nature* and *PNAS*. His work exemplifies how biological science can be advanced by a statistician who understands the scientific underpinnings.

Recent and Significant Publications:

"HIV-1 transmission during early infection in men who have sex with men: A phylodynamic analysis," with E. M. Volz, et al., *PLoS Medicine*, 2013, 10:e1001568.

"Macroeconomic effects on mortality revealed by panel analysis with nonlinear trends," with Z. Wang and J. A. Tapia Granados, *Annals of Applied Statistics*, 7, 2013, pp. 1362-1385.

"Iterated filtering," with A. Bhadra, et al., *Annals of Statistics*, 39, 2011, pp. 1776-1802.

"Malaria in Northwest India: Data analysis via partially observed stochastic differential equation models driven by Lévy noise," with A. Bhadra, et al., *Journal of the American Statistical Association*,106, 2011, pp. 440-451.

Service – Professor Ionides has served continuously on the departmental Qualifying Exam and Incoming Student Screening and Placement committees since 2009. These committees play a crucial role in monitoring and assessing the progress of doctoral students. He has also served on faculty search committees and his work has been instrumental in helping the department identify promising faculty candidates. To the wider community, he was associate editor for *Annals of Statistics* and is currently associate editor for *Electronic Journal of Statistics*.

External Reviewers:
Reviewer (A)
"I think that Ed may well do something very special in statistics/science. ... I recommend Ed, with no miss-givings [sic], for tenure at your fine university."

Reviewer (B)
"Certainly his CV suggests a person with a mature and active research program that is well funded. ...I think Ed has done quite well in establishing himself in the profession – it would be hard to ask for much more. I have no reservations in recommending him for promotion to full professor."

Reviewer (C)
"...he is a 'complete' statistician who is able to develop some cutting edge models and methods motivated by scientific applications, apply them to some important scientific problems and study their theoretical properties."

Reviewer (D)
"...I think he is an established star, with an international reputation as a leader in an important field. I think his work richly merits promotion to professor at Michigan (or other leading institutions)."

Reviewer (E)
"Professor Ionides has graduated three PhD's under his supervision, and is currently working with four more. He has participated in major projects on inference for mechanistic models...and on modeling of infectious disease response... Both of these projects deal with important societal issues, and it is quite important for the field of statistics to have strong representations there."

Reviewer (F)

"...Dr. Ionides has flourished as a good researcher. ... On the application side, Dr. Ionides' collaboration ranges from biology, epidemiology, environmental science to economics. These applications are quite broad and deep. ...he not only contribute solid theoretical works, but more importantly are deeply involved in exciting scientific applications."

Reviewer (G)

"Ed has managed to attract substantial grants from NSF (a very tough nut to crack usually) and also from other funding agencies. ... I find his research very good and of high impact, teaching innovative and service to the scientific community admirable. This is far and beyond what I have seen in many promotion cases."

Reviewer (H)

"The work carried out by Ionides could be done by practically no one else on the planet, as he uniquely possesses the skills needed to prove difficult mathematical theorems involving Levy processes and dynamical systems, as well as the data analysis skills and ability to communicate his results so clearly and effectively in applications."

Summary of Recommendation:

Professor Ionides has made important contributions to the study of infectious disease transmission, and his research on iterated filtering has resulted in major advancements in likelihood-based inference. He is a conscientious teacher and has made numerous contributions to the doctoral program in the Department of Statistics. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Edward L. Ionides be promoted to the rank of professor of statistics, with tenure, College of Literature, Science, and the Arts.

Susan A. Gelman
Heinz Werner Distinguished University Professor,
Professor of Psychology and Interim Dean
College of Literature, Science, and the Arts

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