Curriculum Vitae

A) Name: William Duckworth

B) College: College of Business Administration, Creighton University

C) Department: Information Systems and Technology

D) Date and Rank of First Appointment:

(First Academic Appointment) 1997-1998, Temporary Instructor of Statistics, Iowa State University

(First Appointment at Creighton University) 2006-2007, Associate Professor of Decision Science

E) Secondary Appointments: none

F) Years Granted toward Tenure at Time of Employment:

There is no direct discussion of this issue in my appointment letter. I earned tenure and was promoted to Associate Professor of Statistics at Iowa State University (effective August 2005). My understanding was that I would go up for tenure shortly after my appointment began at Creighton. (My initial appointment letter stated "as soon as August 2007.") Together with my Department Chair and Dean, we decided that the 2008-2009 academic year is the appropriate time to pursue conferral of tenure by Creighton University.

G) Current Rank: Associate Professor of Decision Science, Creighton University

H) Date of Current Rank: August 2006 at Creighton University
(Associate Professor, Iowa State University, August 2005)

I) Date of Tenure: Earned Tenure at Iowa State University (effective August 2005)

J) Proposed Action: Conferral of Tenure at Creighton University

K) Years of Academic Service: 1997 to present, 11+ years

L) Terminal Degree: Ph.D. in Statistics, earned April 1998, from The University of North Carolina at Chapel Hill

M) Schools Attended:

1993-1998 The University of North Carolina at Chapel Hill
1988-1993 Miami University, Oxford, Ohio

N) Degrees Earned:

Ph.D. in Statistics, The University of North Carolina at Chapel Hill, April 1998
M.S. in Statistics, The University of North Carolina at Chapel Hill, April 1996
M.S. in Statistics, Miami University, Oxford, Ohio, May 1993
B.S. in Mathematics and Statistics, Miami University, Oxford, Ohio, December 1991

O) Special Training Programs:

Selected for and successfully completed an NSF-funded workshop titled *Active Learning in Elementary Statistics*, hosted by the Department of Statistics at the University of South Carolina in June 1998.

P) Fields of Interest:

1) Teaching:

Business Applications of Statistics
Statistical Reasoning
Computational Issues in Statistics
Reliability of Statistical Software

2) Research:

Statistics Education
Statistical Reasoning
Computational Issues in Statistics
Reliability of Statistical Software
Resampling Methods
Design of (Statistical) Experiments

Q) Professional Employment:

2006 to present	Associate Professor of Decision Science College of Business Administration, Creighton University
2005-2006	Associate Professor of Statistics Department of Statistics, Iowa State University
1998-2005	Assistant Professor of Statistics Department of Statistics, Iowa State University
1997-1998	Temporary Instructor of Statistics Department of Statistics, Iowa State University
1995-1997	Technical Employee SAS Institute, Inc., Cary, NC
1993-1997	Teaching Assistant Department of Statistics, The University of North Carolina at Chapel Hill
1992-1993	Teaching Assistant Department of Mathematics and Statistics, Miami University, Oxford, OH
1990-1991	Actuarial Intern Great American Insurance Company, Cincinnati, OH

R) Consultantships and Professional Services:

Developed and delivered various professional training sessions for Boehringer Ingelheim Vetmedica, Ames, Iowa. One session in 2001, and three sessions in 2005.

In addition to training sessions for Boehringer Ingelheim Vetmedica, I have also consulted on various statistical studies for the company's labs (2000 to 2006).

Developed and delivered a short course titled *Getting Started with JMP at ISU* on how to use JMP software for teaching and research, November 28, 2000 and January 24, 2001.

I have also been asked to consult on several statistics textbook projects for several different publishers including Springer-Verlag, Key College Press, McGraw-Hill/Irwin, Prentice-Hall, and SAS Publishing. The titles I consulted on follow:

Statistics: The Art and Science of Learning from Data
Authors: Alan Agresti, Christine Franklin
Publication Date: 2007
Role in project: offered critical feedback on several chapters

Data Matters: Conceptual Statistics for a Random World
Author: Nicholas Maxwell
Publication Date: 2003
Role in project: offered critical feedback on entire text

Business Statistics in Practice
Authors: Bruce Bowerman, Richard O'Connell
Publication Date: 2002
Role in project: offered critical feedback on several chapters

SAS System for Mixed Models
Authors: Ramon Littell, George Milliken, Walter Stroup, Russell Wolfinger
Publication Date: 1996
Role in project: offered critical feedback on several chapters, provided SAS code and output for all examples in the text

Categorical Data Analysis Using the SAS System
Authors: Maura Stokes, Charles Davis, Gary Koch
Publication Date: 1995
Role in project: offered critical feedback on entire text, provided SAS code and output for many examples in the text

S) Organizations:

American Statistical Association (ASA), member, 1997 to present

International Association for Statistical Education (IASE), member, 2000 to present

Decision Sciences Institute (DSI), member 2006 to present

Mathematical Association of America, member, 2000-2005

Making Statistics More Effective in Schools of Business (MSMESB), member, 1997-2006
Note: MSMESB essentially disbanded in 2006, although it may be revived in a new form at some point.

T) Fellowships and Honors:

Nominated by peers for the American Statistical Association's Waller Education Award, 2006

Iowa State University Foundation Award for Early Achievement in Teaching, 2001

Nominated by students for VEISHEA Outstanding Faculty Award, Iowa State University, 1999

Excellence in Teaching Award, The University of North Carolina at Chapel Hill, 1996

Hoeffding Award for Excellence in the First Year of the Ph.D. program, The University of North Carolina at Chapel Hill, 1994

Golden Key National Honor Society, 1991

Phi Kappa Phi, 1991

Phi Beta Kappa, 1991

U) Awards and Prizes:

Technology in Teaching Award, The University of North Carolina at Chapel Hill, 1997

Nicholson Scholar in the Statistics Department, The University of North Carolina at Chapel Hill, 1993-1994

Ohio Board of Regents Graduate Fellow, Miami University, Oxford, Ohio, 1992-1993

Lois Beck Alumni Scholar, Miami University, Oxford, Ohio, 1988-1991

V) Grants (funded):

Source: National Science Foundation (NSF)
Title: Conceptual Statistics: Engaging Students in Statistical Discovery
Amount: $74,976
Date: May 16, 2003 to May 15, 2005
Role: Co-Principal Investigator (shared equally with 2 other Co-PIs)

Source: Miller Faculty Fellowship, Iowa State University
Title: Engaging Students in Statistical Discovery
Amount: $20,300
Date: July 1, 2002 to June 30, 2003
Role: Co-Principal Investigator (shared equally with 2 other Co-PIs)

Source: National Science Foundation (NSF)
Title: Beyond Traditional Statistical Methods
Amount: exact amount unknown ($250,000+)
Date: May 16, 1997 to May 15, 2003
Role: This grant was awarded a few months before I arrived at Iowa State University. The Co-PIs asked me to join them on this project when arrived in August 1997. Although I was not an official Co-PI as far as paperwork was concerned, I was one of four primary contributors to the work of the project (developing and testing course materials on advanced statistical methods for use with undergraduates and non-major graduate students). The original 3 year grant was extended (with more money) to 6 years due to the quality of our work. The resulting publication (of the same title) was written by W. Robert Stephenson and I. We presented the work at the largest and most significant statistical conference (Joint Statistical Meetings) and the work was

published in the prominent, refereed journal The American Statistician. We have been approached by publishers wanting us to make our work into a text as well as by several universities wanting to adapt our work for their specific situations.

Grants (not funded):

Source: National Science Foundation (NSF)
Title: Partner Resources in School Mathematics
Amount: $1,384,781
Date: September 30, 1999 to September 30, 2002
Role: Co-Principal Investigator (shared equally with 3 other Co-PIs)

W) Scholarship:

1) Publications and Presentations:

a) Monographs and Books:

Moore, D., McCabe, G., Duckworth, W., and Alwan, L. (2008). *The Practice of Business Statistics, Second Edition,* W.H. Freeman Publishers, textbook for introductory business statistics, 843 pages.
Contribution: Approximately 50% of work done by Duckworth (and 50% by McCabe)

Duckworth, W. (2008). *Nonparametric Tests,* W.H. Freeman Publishers, optional supplement for *The Practice of Business Statistics, Second Edition,* 35 pages.

Duckworth, W. (2008). *Bootstrap Methods and Permutation Tests,* W.H. Freeman Publishers, optional supplement for *The Practice of Business Statistics, Second Edition,* 60 pages.

Moore, D., McCabe, G., Duckworth, W., and Sclove, S. (2003). *The Practice of Business Statistics, First Edition,* W.H. Freeman Publishers, textbook for introductory business statistics, 695 pages.
Contribution: Approximately 33% of work done by Duckworth (and 33% each by Moore and McCabe)

Duckworth, W. (2003). *Time Series Forecasting,* W.H. Freeman Publishers, optional supplement for *The Practice of Business Statistics, First Edition*, 42 pages.

Duckworth, W. and Derr, B. (1997). *Getting Started with the Market Research Application,* SAS Publishing, 64 pages.
Contribution: Approximately 50% of the work
Note: Officially, the "author" is listed as "SAS" because this work was considered to be software documentation and was self-published by SAS Institute, Inc.

b) Articles:

Refereed Journals:

Froelich, A., Stephenson, W., and Duckworth, W. (2008). *Assessment of Materials for Engaging Students in Statistical Discovery,* Journal of Statistics Education, Volume 16, No. 2 (July).
Contribution: Approximately 30% of the work

Froelich, A., Duckworth, W., and Stephenson, W. (2005). *Training Statistics Teachers at Iowa State University,* The American Statistician, Volume 59, No. 1 (Feb.), pp. 8-10.
Contribution: Approximately 33% of the work

Marasinghe, M., Duckworth, W., and Shin, T. (2004). *Tools for Teaching Regression Concepts Using Dynamic Graphics,* Journal of Statistics Education, Volume 12, No. 2 (July).
Contribution: Approximately 40% of the work

Duckworth, W. and Stephenson, W. (2002). *Beyond Traditional Statistical Methods,* The American Statistician, Volume 56, No. 3, pp. 230-233.
Contribution: Approximately 50% of the work

Duckworth, W. (2000). *Some Maximin Distance Designs,* Journal of Statistical Planning and Inference, Volume 88, pp. 149-170.
Note: This paper was based, in part (about 70% of the material), on my dissertation; however, my advisor did not do any of the research or writing for this material and acknowledged this by asking that I not put his name on as co-author (although I offered to add him out of respect for his role in my education).

Non-refereed Journals:

Froelich, A. and Duckworth, W. (2007). *Using JMP Scripts in Teaching Introductory Statistics,* American Statistical Association Proceedings of the Section on Statistical Education.
Contribution: Approximately 50% of the work

Froelich, A., Duckworth, W., and Stephenson, W. (2006). *Further Assessment of Materials for Engaging Students in Statistical Discovery,* American Statistical Association Proceedings of the Section on Statistical Education.
Contribution: Approximately 30% of the work

Froelich, A., Duckworth, W., and Stephenson, W. (2005). *Assessment of Materials for Engaging Students in Statistical Discovery,* American Statistical Association Proceedings of the Section on Statistical Education.
Contribution: Approximately 30% of the work

Froelich, A., Duckworth, W., and Stephenson, W. (2004). *Engaging Students in Statistical Discovery,* American Statistical Association Proceedings of the Section on Statistical Education.
Contribution: Approximately 30% of the work

Duckworth, W. and Stephenson, W. (2003). *Resampling Methods: Not Just for Statisticians Anymore,* American Statistical Association Proceedings of the Section on Teaching Statistics in the Health Sciences.
Contribution: Approximately 50% of the work

Duckworth, W. and Stephenson, W. (2000). *Statistical Computing: An Undergraduate Course for the New Millennium,* American Statistical Association Proceedings of the Section on Statistical Education.
Contribution: Approximately 60% of the work

Duckworth, W. and Stephenson, W. (2000*). Beyond Traditional Statistical Methods,* American Statistical Association Proceedings of the Section on Statistical Education.
Contribution: Approximately 50% of the work

In-progress submissions to refereed journals:

Froelich, A. and Duckworth, W. with Culhane, J. *Does Your iPod Really Play Favorites?,* The American Statistician, accepted for publication following minor revisions, anticipated publication in 2009 or 2010.
Contribution: Approximately 40% of the work

Stephenson, W., Froelich, A., and Duckworth, W. *Resampling, With and Without Replacement,* Teaching Statistics, submitted June 2008.
Contribution: Approximately 33% of the work

Duckworth, W. and Stephenson, W. *Statistical Computing: An Undergraduate Course for the New Millennium,* Journal of Statistics Education, encouraged to revise and resubmit.
Contribution: Approximately 60% of the work

Invited Presentations:

Duckworth, W. (2007). *Appropriate Use of Software in Introductory Business Statistics Courses,* Decision Sciences Institute annual conference, November 2007.

Duckworth, W. and Stephenson, W. (2003). *Resampling Methods: Not Just for Statisticians Anymore,* Joint Statistical Meetings annual conference, August 2003.
Contribution: Approximately 45% of the work

Duckworth, W. (2002). *Web Infrastructure to Support ASA Educational Programs,* Joint Statistical Meetings annual conference, August 2002.

Duckworth, W. (2001). *An Internet Portal for Statistics Education,* Joint Statistical Meetings annual conference, August 2001.

Duckworth, W. (1999). *A Statistics Education Position at a Research I University,* Sixth International Conference on Statistics, Combinatorics, and Related Areas, December 1999.
Note: I also gave a contributed talk titled *Binary Space-Filling Designs* at this conference.

Contributed Presentations:

I have presented poster sessions on topics including statistical software use, development of teaching software for statistics, and assessment of student engagement in learning statistics at the Joint Statistical Meetings annual conference in the years: 2008, 2007, 2006, 2005, 2004, 2000, and 1999.

c) Reviews: none

d) Abstracts and Scholarly Papers: none

e) Artistic Exhibits and Performances: none

f) Other Publications and Presentations not listed in a) through e):

Vardeman, S. and Morris, M. (2003). *Statistics and Ethics: Some Advice for Young Statisticians,* The American Statistician, Volume 57, No. 1, pp. 21-26.
Note: I was honored to have been asked to provide input into the content and flow of this paper addressing the issue of ethical statistical practice to undergraduate and graduate

students studying statistics. I was one of eighteen professionals ask to participate in the forming of this paper. I was (and still am) humbled to have been included in a list that includes many of my "statistical heroes" when I was asked to become a part of this work by the two authors.

2) Other achievements in the area of scholarship: none

X) Teaching:

1) Load and Level by Year (since coming to Creighton University)

2008-2009 Academic Year:

Fall 2008	BUS229 – Statistical Analysis (4 hours, 2 sections) RSP103 – Ratio Studiorum Program (1 hour, 1 section) Total Credit Hours: 9
Spring 2009	BUS229 – Statistical Analysis (4 hours, 2 sections) Total Credit Hours: 8
Summer 2009	BUS229 – Statistical Analysis (4 hours, 1 sections) Total Credit Hours: 4

2007-2008 Academic Year:

Fall 2007	BUS229 – Statistical Analysis (4 hours, 2 sections) RSP103 – Ratio Studiorum Program (1 hour, 1 section) Total Credit Hours: 9
Spring 2008	BUS229 – Statistical Analysis (4 hours, 2 sections) Total Credit Hours: 8
Summer 2008	BUS229 – Statistical Analysis (4 hours, 1 sections) Total Credit Hours: 4

2006-2007 Academic Year:

Fall 2006	BUS229 – Statistical Analysis (4 hours, 2 sections) Total Credit Hours: 8
Spring 2007	BUS229 – Statistical Analysis (4 hours, 2 sections) Total Credit Hours: 8
Summer 2007	BUS229 – Statistical Analysis (4 hours, 1 sections) Total Credit Hours: 4

2003-2006 Academic Years at Iowa State University:

Typical Fall Schedule	STAT226 – Business Statistics I (3 hours, 1 of 6-8 sections, 100 students/section) STAT326 – Business Statistics II (3 hours, 5 sections, 1 lecture, 300 students) STAT226 TA Coordinator (5-7 TA's) STAT326 Lab TA Coordinator (10 lab TA's) Total Credit Hours: 6 plus 2 Coordinator Assignments
Typical Spring Schedule	STAT326 – Business Statistics II

(3 hours, 5 sections, 1 lecture, 300 students)
STAT480 – Statistical Computing
(3 hours, 1 section, 25 students)
STAT226 TA Coordinator (6-8 TA's)
STAT326 Lab TA Coordinator (10 lab TA's)
Total Credit Hours: 6 plus 2 Coordinator Assignments

Typical Summer Schedule
STAT328 – MBA Statistics
(3 credit hours, 2 sections, 20 students/section)
STAT227 TA Coordinator (2-3 Tas)
Total Credit Hours: 6 plus 1 Coordinator Assignments

1997-2003 Academic Years at Iowa State University:

Typical Fall Schedule
STAT227 – Business Statistics
(5 hours, 1-2 of 6 sections, 100 students/section)
STAT401 – Statistical Methods for Researchers
(4 hours, 1 section, 40-50 students)
STAT201 TA Coordinator (2-3 TA's)
STAT227 TA Coordinator (110-11 TA's)
Total Credit Hours: 9-10 plus 2 Coordinator Assignments

Typical Spring Schedule
STAT227 – Business Statistics
(5 hours, 1 of 6 sections, 100 students/section)
STAT415 – Computationally Intensive Methods
(3 hours, 1 section, 4-10 students, team taught)
STAT480 – Statistical Computing
(3 hours, 1 section, 25 students)
STAT201 TA Coordinator (2-3 TA's)
STAT227 TA Coordinator (110-11 TA's)
Total Credit Hours: 8+ plus 2 Coordinator Assignments

Typical Summer Schedule
STAT227 TA Coordinator (2-3 TAs)

2) Other contributions to the area of teaching (since coming to Creighton University)

Recent changes in the MBA program at Creighton resulted in what I will call the "Statistical Component" of the degree being removed from a core course where it had traditionally been taught. The MBA faculty considered several third-party options for providing this Statistical Component to the students. After reviewing the options under consideration, I made a proposal. I offered to design, create, and deliver the Statistical Component of our MBA program. I believe the benefits of my proposal are many, including: no third-party customer service to deal with, quick feedback loop to improve the Statistical Component and customize it for our MBA students, and efficient use of a Creighton resource (me!). The first version of the materials are being used this fall (Fall 2008) with approximately a dozen MBA students reporting directly to me. I trust the materials will improve and evolve over the next few years to become something for which Creighton can be very pleased.

Y) Graduate and Honors Student Theses:

While I have not directed any student work since arriving at Creighton, I directed both undergraduate and graduate student work at Iowa State University for Statistics majors and majors in other fields of study. A sampling of examples follow:

Undergraduates:

James Abbey, undergraduate statistics major, a "Top 2% Scholar Leader" at ISU
James completed testing of hardware and software systems by using various statistical algorithms and statistical software. James wrote up this work and has it posted at the site www.MISnews.com. James was (is) a superstar student who went on to a graduate degree at ISU and is now in a Ph.D. program at Penn State.

Christy Anderson, undergraduate at ISU, went on to Pharmacy School at Creighton
Christy completed an independent study with me that involved applying logistic regression techniques (something she had not had in a class) to a biology project at ISU.

Anthony Kassekert, undergraduate statistics major, now pursuing a Ph.D. at Florida State
Tony completed research on the reliability of the TI-83 and TI-89 calculators with regard to their built-in statistical functions. Tony calculated benchmarks for both calculators using the NIST Statistical Reference Datasets (www.itl.nist.gov/div898/strd/).

Graduate Students:

Credit Scorecard Development by Kira Barclay Sisson (2005)

Causality in Variance Test using CCF and Wald Test by Yongsik Jeon (2004)

Sample design for Quality Monitoring and Measurement Error Evaluation of Large-scale Longitudinal Surveys by Cristiano Ferraz (2004)

Estimating Corporate Charitable Giving for Giving USA by William Chin (2004)

Learning Mathematics with the Aid of Journaling by Dan Aalbers (2002)

Field Incentive Systems for Electrical Contractors by Michael McArtor (2002)

Investigation into Pavement Curing Materials by Zhi Ge (2002)

An Investigation of Balanced Sampling Excluding Adjacent Units by James Wright (2002)

A Comparison of the Effects of Using Interactive WWW Modules versus Hands-on Activities on the Conceptual Understanding and Attitudes of Introductory Statistics Students by Barbara Barnet (1999)

Z) Service:

1) To the University:

Creighton University:

Teaching Development Committee, CoBA, April 2008 to present

Teaching Load Metric Task Force, CoBA, April 2007 to April 2008

Academic Advisor to 33 CoBA undergraduates

Iowa State University:

Preparing Future Faculty (PFF) Mentor, 2004-2005

Statistical Software Selection Task Force, 1999-2001

Undergraduate Committee (Departmental), 1997-2006

Curriculum Committee (Departmental), 1997-2005
Chair: 2004-2005

Computer Advisory Committee (Departmental), 2001-2006

Student-Faculty Committee on Instruction (Departmental), 1997-2001, 2004-2006
Chair: 2000-2001

Academic Advisor to 10 undergraduate statistics majors (average per year)

2) To the Profession:

Associate Editor, Journal of Statistics Education, 2004 to present
Note: The Journal of Statistics Education handles approximately 100 new submissions and 30 revised submissions per year with an overall acceptance rate in the 20-25% range. We currently have 23 Associate Editors working for the journal. In 2006, I was asked to apply for the position of Editor; however, the position was eventually awarded to Dr. William Notz from The Ohio State University.

Associate Editor of Educational Content, Amstat Online, 1999-2005
Note: Amstat Online is the American Statistical Association's website. The American Statistical Association (ASA) is the premier (largest and most significant) association for academic, professional, and government statisticians. In 1999, the ASA decided to treat the website as any other publication and selected an Editor and 8 Associate Editors for specific content areas on the site. Everyone served 3 year terms. When my initial term ended in 2002, I was selected again for a second term. Near the end of my second term, the ASA reconsidered this approach to the site and now has each section and subgroup in charge of its own content (rather than trying to manage content by broad topic areas). This was an important phase of the ASA's website growth, but like so many things on the web, the site soon outgrew the Editorial management model and moved in a different direction. I am delighted to point out that the site retains the structure and emphasis that I created during my tenure as Associate Editor even after the change in management structure (www.amstat.org/education/).

I have served as a referee for numerous articles for the following journals: Journal of Statistics Education, Journal of Statistical Planning and Inference, The American Statistician, Technometrics, Chance Magazine (an ASA magazine, targeted at the general public), and

STATS Magazine (an ASA magazine, targeted at undergraduate statistics majors).

In 2000, I was asked (along with eleven others) to represent the American Statistical Association (ASA) at a workshop of the Mathematical Association of America (MAA) held at Grinnell College, Grinnell, Iowa. The workshop's task was to develop recommendations to the MAA on two topics: (1) calculus reform as it relates to statistics majors and (2) statistics content for mathematics majors. Our work was later published by the MAA as Chapter 14 in their *Curriculum Foundations Project*, pages 125-144. It was an honor to be asked to participate with such a group of distinguished statisticians and mathematicians on such an important task.

Also in 2000 (a busy year!), I was invited to participate in the American Statistical Association's Undergraduate Statistics Education Initiative (USEI). The charge given to the USEI members was to develop curriculum guidelines for undergraduate statistics programs. Our work culminated in the publication of the ASA's *Curriculum Guidelines for Undergraduate Programs in Statistical Science*. These guidelines were approved and adopted by the ASA Board of Directors in December 2000. There were a total of 40 invited participants from small and large schools, government, and industry. Again, it was an honor to be asked to participate with such a group of distinguished statisticians on such an important task.

I organized a session on Space-filling Designs for the Design and Analysis of Experiments (DAE) conference in Vancouver, B.C., Canada, July 2002.

I was selected from a pool of applicants to participate in an NSF-funded workshop on Active Learning in Elementary Statistics, University of South Carolina, 1998.

I chaired a session at the Fiftieth Anniversary Conference of the Department of Statistics, Iowa State University, 1997.

3) To the Community:

Step Out and Serve 2008 volunteer, August 24, 2008, Omaha, NE, www.stepoutomaha.com

Spoke at Trinity Christian School Career Event, Sixth Grade audience, April 2008
(talked about career as professor at Creighton, author, and statistician), Omaha, NE

Elected to Ames Christian School school board, Ames, IA, 2002-2006
President, 2005-2006
Note: Ames Christian School is a small, private school in Ames, Iowa, serving about 120 children in grades K-12.

Spoke to Ames Christian School (several times, several grades) about elementary probability and statistics (especially related to election polls in 2004).