

**Finding Aid for The Faculty Papers of Dr. Richard Burden,  
1965-2017**



Record Group Number RG #62/10  
University Archives and Special Collections William F. Maag ,  
Jr. Library Youngstown State University One University Plaza  
Youngstown, OH 44555 330-941-3487 (Phone) 330-941-3734  
(Fax)

## **Descriptive Summary**

**Title:** The Faculty Papers of Dr. Richard Burden, 1965-2017

**Creator:** Dr. Richard L. Burden

**Extent:** 10.23 Cubic feet (8 record boxes and one shoe size box)

**Abstract:** Papers maintained by Dr. Richard Burden during his tenure at YSU. Included are materials for his courses, department files, publications, and his student work.

## **Administrative Information**

**Provenance:** Dr. Richard L. Burden

**Preferred Citation:** Youngstown State University, The Faculty Papers of Dr. Richard Burden, 1965-2017 RG #62/10, Archives & Special Collections, William F. Maag, Jr. Library, Youngstown State University, Youngstown, Ohio.

**Restrictions:** Yes

**Processing :** Processed by Lisa Marie Garofali, November – December 2020

**Finding Aid:** Written by Lisa Marie Garofali, January 2021

## Historical Background

Richard Burden received his Bachelors of Arts in Mathematics and Physics in 1966 from Albion College, his Masters of Science degree from the Case Western University in 1968, and his Ph.D from Case Western University in Mathematics in 1971. He started teaching at Youngstown State University in 1970 as an Assistant Professor of Mathematics and then promoted to Associate Professor in 1976.<sup>1</sup>

With the growth of computers, The Computer Sciences courses started in 1970 at YSU as part of the Mathematics Department. Initially offered as a minor, the Computer Science major first appeared in Fall 1975. It remained as part of the Mathematic Department until splitting into its own department in 1993.<sup>2</sup> Dr. Richard Burden received his Masters in Computer Sciences from the University of Pittsburgh in 1981. He specialized in three divers areas of computer science related research namely numerical methods for solving engineering problems, to develop programming languages for compiler construction programs and workin on genetic algorithms, to solve non-linear optimization systems.<sup>3</sup> Shortly after receiving his master's in Computer Science, Dr. Burden became Department Chairman of Mathematical and Computer Sciences from 1983 until 1988.

Dr. Burden received several awards while teaching at YSU. He received the Distinguished Professorship award three times (1981-1982, 1992-1993, and 2004-2005), the Watson Foundation Merit Award in 1986-1987, and was granted sabbatical leave during the years 1980-1981, and 1995-1996. He was also the ACT Editor/Writer of Numerical Analysis Examination for the Society of Actuaries from 1990-2000. He co-authored two interaionally renowned textbooks, *Numerical Analysis* (now in its 10<sup>th</sup> edition) and *Numerical Methods* (now in its 4<sup>th</sup> edition).<sup>4</sup>

Dr. Burden officially retired in 2006, but continued teaching as Faculty Emeritus until 2016. In 2015, Dr. Burden and his wife, Annette, of whom he met in the Math Department when she was a part-time instructor in 1979, donated \$30,000 to the YSU Foundation to support their passion for applied numerical analysis. The endowment honors the memories of their parents, Rocco A. and Elizabeth A. Sedall and Edward O. and Harriet W. Burden. The created the Center of Applied Numerical Analysis in Science, Technology, Engineering, Mathematics, and Medicine (CANASTEMM). Activities of the center will include workshops, forums, conferences and speakers on topics in numerical analysis, development of an interdisciplinary minor in applied sciences, internships and other practical learning experiences for YSU students.<sup>5</sup>

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<sup>1</sup> Take from his C. V. in the collection in Box 5 folder 7 "Correspondence: Graduate Faculty Status).

<sup>2</sup> "History of the Mathematics department." [mathstat.ysu.edu/departments/history/departments/history.html](http://mathstat.ysu.edu/departments/history/departments/history.html) (accessed 1/06/2021).

<sup>3</sup> "About Us" section of the Computer Sciences Department <https://csis.ysu.edu/about> (accessed 1/06/2021).

<sup>4</sup> C.V.

<sup>5</sup> "Mathematics Profs' Gift Supports Applied Numic Analysis" from *The YSU News Brief*. 30 October 2015 and from the "CANASTEMM: About US" <https://amburden.people.ysu.edu/about-us/> (accessed 01/07/2021).

## Scope and Content

This collection is artificial and arranged by type of material alphabetically. The documents date from 1965-2017 with a bulk of the dates between 1975-2010. About half of the collection contains information on the courses Dr. Burden taught in the Mathematics and Computer Sciences departments. The other half contains department information (correspondences, goals, schedules, evaluations ect...), publications (mainly his textbook on numerical analysis that he co-authored with Dr. Faires), and his student work (notebooks from his undergraduate and graduate studies). Dr. Burden's area of specialty is on numerical analysis.

## Colophon

The chair of the Mathematics department, Dr. Wakefield, contacted the Archives and Special Collections in September, 2020 about Dr. Burden's faculty papers, which were still in an office on the 6<sup>th</sup> floor of the Lincoln Building in the Mathematics Department. Dr. Burden retired and there was need for his office space. The materials were mainly kept in filing cabinets with a couple boxes resting on shelves. The original collection contained approximately 11 boxes of material.

The materials which were weeded out were a box of schedules of classes (which was supplemented to our collection and the rest returned to Dr. Wakefield at his request). Items such as class rosters were disregarded (securely) due to the listing of students' social security numbers as well as personnel material such as sick leave forms as according to the records retention schedule. Journal articles that were not written by Dr. Burden or reviewed by him, were disregarded. Many of the journal articles are now available digitally through the university databases and replication in the collection seemed unnecessary.<sup>6</sup> Duplicated material was also disregarded.

This collection was processed by Lisa Marie Garofali, who also wrote the finding aid. She holds a M.A. in History from YSU and is a 13-year employee of Archives & Special Collections.

## Series Description

Series I : Courses

Series II: Department files

Series III: Publications

Series IV: Student Work

Series V: Subject Files

Series VI: Media and various material

## Related Materials

Maag Stacks:

*Numerical Analysis* By Richard L. Burden, J. Douglas Faires and Albert C. Reynolds

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<sup>6</sup> A list of the Journal titles and other disregarded materials are included in the original inventory with the accession record.

Maag Library stacks: QA297 .B84 1997

*Numerical Methods* By J. Douglas Faires, Richard Burden. Maab Library stacks: QA297 .F35  
1998

Archival Collections:

The Faculty Papers of Dr. Douglas Faires (unprocessed)  
The Department of Mathematics Records (unprocessed)  
The Faculty Papers of Dr. Zbigiew Piotrowski Papers (processed)  
*The Bulletin* Catalogs  
*The Neon* Yearbooks  
*The Jambar* Student Newspaper

**Index Terms**

Albion College  
Burden, Annette  
Case Western Reserve University  
Faires, Douglas  
Hedstrom, G.W  
Knowles, Sean Leonardo  
Numerical Analysis  
Numerical Methods  
Reynolds, Albert C.  
Ritchley, Nathan  
The University of Pittsburgh

**BOX 1**

**SERIES I: Courses**

This is the largest series in the collection. It contains files on the courses Dr. Burden taught from 1970-2015. Dr. Burden taught Computer Science courses from 1979-1994. Courses in Mathematics were taught from 1970-2015. Most of the files contain the following information on each course: syllabus, quizzes, tests, projects, some homework and notes. Material also included are graduate courses and work such as MS exams and several theses.

\*Note course codes were changed in 2000/2001 when the university transferred from a quarter system to a semester system.

**Folder No. Contents**

- 1 Courses. C.S. 601. Advanced Programming. 1982-1985 undated
- 2 Courses. C.S. 610L. Programming Laboratory. 1989-1995
- 3 Courses. C.S. 610. Computer Programming I. 1989-1993
- 4 Courses. C.S. 615. Computer Programming 2. 1991-1994

- 5 Courses. C.S. 615. Computer Programming 2. Notes. 1991-1994
- 6 Courses. C.S. 620. Computers and Programming. 1983-1993
- 7 Courses. C.S. 620. Computers and Programming. Notes. 1983-1993
- 8 Courses. C.S. 700. Data Structures. 1977-1985
- 9 Courses. C.S. 700. Data Structures. Notes. 1985, undated
- 10 Courses. C.S. 740. Computer Logic and Organization (formerly 815). 1985-1988
- 11 Courses. C.S. 740. Computer Logic and Organization. (formerly 815).1985-1992
- 12 Courses. C.S. 740. Computer Logic and Organizations (formerly 815). Homework. 1985-1987
- 13 Courses. C.S. 770. Survey of Programming Languages. 1988-19882
- 14 Courses. C.S. 770. Survey of Programming Languages. Homework and Projects. 1975-1992. Pt. 1 of 2
- 15 Courses. C.S. 770. Survey of Programming Languages. Homework and Projects. 1975-1992. Pt. 2 of 2
- 16 Courses C.S. 780. Microcomputer Systems Software. 1986-1990

## **BOX 2**

### **SERIES I: Courses**

#### **Folder No. Contents**

- 1 Courses. C.S. 805. Systems Programming. 1980-1990. Pt. 1 of 2
- 2 Courses. C.S. 805. Systems Programming. 1980-1990. Pt. 2 of 2
- 3 Courses. C.S. 805. Systems Programming. 1990-1994
- 4 Courses. C.S. 806. Systems Programming II. 1982-1983. Pt. 1 of 2
- 5 Courses. C.S. 806. Systems Programming II. 1982-1983. Pt. 2 of 2
- 6 Courses. C.S. 806. Operating Systems. 1990-1995. Pt. 1 of 2
- 7 Courses. C.S. 806. Operating Systems. 1990-1995. Pt. 2 of 2
- 8 Courses. C.S. 807. Compiler Designs. 1983-1989
- 9 Courses. C.S. 815. Computer Logic and Organization I. 1982-1985. Undated
- 10 Courses. C.S. 816. Computer Logic and Organization II. 1982-1983
- 11 Courses. C.S. 820. Simulation. 1979
- 12 Courses. C.S. 860. Concepts of Programming Languages. 1979-1980
- 13 Courses. C.S. 881. Microcomputer System Architecture. 1990-1993, undated. Pt. 1 of 3
- 14 Courses. C.S. 881. Microcomputer System Architecture. 1990-1993, undated. Pt. 2 of 3
- 15 Courses. C.S. 881. Microcomputer. Systems Architecture. 1990-1993, undated. Pt. 3 of 3

## **BOX**

### **SERIES I: Courses**

**Folder No. Contents**

- 1 Courses. C.S. 890. Computer Projects. 1990-1992
- 2 Courses. C.S. 890. Proposal on Intel 80386 microprocessor. 1989
- 3 Courses. C.S. 905. Information structures. 1982, 1993, undated
- 4 Courses. C.S. 910. Computer Software Systems. 1983, undated
- 5 Courses. C.S. 915. Computer Organization and Architecture. 1983
- 6 Courses. M 500. Elementary Algebra I. 1996
- 7 Courses. M 523. Survey of Mathematics. 1976
- 8 Courses. M 525 (1513). Algebraic and Transcendental Functions. 1998-2004
- 9 Courses. M 535. Mathematics for Elementary school Teachers I. 1998-1999
- 10 Courses. M 542. Applied Finite Mathematics. Undated
- 11 Courses. M 550. Calculus for Social, Managerial, and Life Sciences. 1997-2000
- 12 Courses. M 571 (1571). Calculus I. 1996
- 13 Courses. M 572. Calculus II. 1994-2000
- 14 Courses. M 1507. Intermediate Algebra. 2009
- 15 Courses. M 1548. College Business Math I. 2001-2008
- 16 Courses. M 1549. College Business Math II. 2004-2006
- 17 Courses. M 1552. Applied Mathematics for Management. 2015
- 18 Courses. M 1585H. Calculus I Honors. 2000
- 19 Courses. M 673. Calculus III. 1995
- 20 Courses. M 673 (2673). Calculus III. 2001, 2006
- 21 Courses. M 674. Calculus IV. 1995
- 22 Courses. M 681. Biomathematics III. 1976-1977
- 23 Courses. M 705 (3705). Differential Equations. 1977-2009. Pt. 1 of 3
- 24 Courses. M 705 (3705). Differential Equations. 1977-2009. Pt. 2 of 3
- 25 Courses. M 705.(3705). Differential Equations. 1977-2009. Pt. 3 of 3

**BOX 4****SERIES I: Courses****Folder No. Contents**

- 1 Courses. M 706. Differential Equations II. 1973-1978, 1994, undated. Pt. 1 of 2
- 2 Courses. M 706. Differential Equations II. 1973-1978, 1994, undated. Pt. 2 of 2
- 3 Courses. M 710. Higher Mathematics for Engineers and Physicists. 1970
- 4 Courses. M 714. Probability and Statistics. 1975, undated
- 5 Courses. M 714 (C.S. 820??). Probability and Statistics. 1977-1982
- 6 Courses. M 3720. Linear Algebra and Matrix Theory. 2004, undated
- 7 Courses. M 725. Descriptive Matrix and Linear Algebra. 1994
- 8 Courses. M 726. Theory of Equations. Undated
- 9 Courses. M 760 (3760). Numerical Analysis. 1980-2010. Pt. 1 of 2

- 10 Courses. M 760 (3760). Numerical Analysis. 1980-2010. Pt. 2 of 2
- 11 Courses. M 785. Matrix Algebra and Numerical Methods. 1994-1997
- 12 Courses. M 5860. Topics in Numerical Analysis. 2002-2012
- 13 Courses. M 5861 (861). Numerical Analysis 2. 1984-2012. Pt. 1 of 2
- 14 Courses. M 5861 (861). Numerical Analysis 2. 1984-2012. Pt. 2 of 2
- 15 Courses. M 871. Advanced Calculus I. undated, pre 1980s.
- 16 Courses. M 872. Advanced Calculus II. 1977
- 17 Courses. M 925. Matrix Iterative Analysis I (Graduate Course) 1979. Pt. 1 of 2
- 18 Courses. M 925. Matrix Iterative Analysis I (Graduate Course) 1979. Pt. 2 of 2
- 19 Courses. MS Exams. 1971-1984
- 20 Courses. Student papers. 2006, undated
- 21 Courses. Thesis. A Mathematical Approach to the Transfer for Lead in the Human Body. 2005
- 22 Courses. Thesis. Analysis of Ecological Data on Coarse Woody Debris Volume Using Mixtrure Models. 2005
- 23 Courses. Thesis. Comparison of Logistic Force of Mortality Models for Predicting Life Table Probablilities of Death.2011

## **BOX 5**

### **SERIES I: Courses**

#### **Folder No. Contents**

- 1 Courses. Thesis. Dynamics of a Cardiac Ventricular Action Potential Model. Undated
- 2 Courses. Thesis. On the Cyclic Reduction of Tridiagonal Systems. 2005
- 3 Courses. Thesis. Prediction of Concrete Compressive Strength Using Robust Regression. 2009

### **SERIES II: Department Files**

This series relates to the department files of the Mathematics Department with most of the material dating from the mid 1990s-2000s. Included are several awards, correspondences, department schedules, Dr. Burdens goals and evaluations. Surprisingly, there is little information during his time as Chairman of the Mathematics and Computer Science departments from 1983-1989.

#### **Folder No. Contents**

- 4 Department Files. Awards and Certificates. 1981-2006
- 5 Department Files. Chairperson Evaluation. 1992-2005
- 6 Department Files. Correspondence. 1988-2006, undated
- 7 Department Files. Correspondence. Graduate Faculty Status. 1996-2006
- 8 Department Files. Distance Learning Advisory Committee. 2007-2008



- 9 Department Files. Faculty Department Schedules. 1999-2008
- 10 Department Files. Faculty Development/ Non-Teaching Duties. 1990-2006
- 11 Department Files. Goals. 1997-2005
- 12 Department Files. Numerical Methods. Annette Burden. 2004
- 13 Department Files. Research Assistant. 2003-2005
- 14 Department Files. Research Assistant/Student/Reference. Sean Leonardo Knowles. 2004-2008
  
- 14B Department Files. Reviews. Articles and Textbooks. 1974-1975
  
- 15 Department Files. Student Evaluations. 1976-1983
- 16 Department Files. Student Evaluations. 1988-2000
- 17 Department Files. Student Evaluations. 2000-2017

**SERIES III: Publications**

Most of this series contains information on the textbook *Numerical Analysis* and later *Numerical Methods*. *Numerical Analysis* was co-authored by Dr. Richard Burden and Douglas Faires. It went through several editions with the last edition being the 10th edition in 2015. After Dr. Faires died in 2011, Dr. Burden's wife, Annette, assisted with the newer editions. Both textbooks (*Numerical Methods* and *Numerical Analysis*) contain very similar and sometimes the same material. It was hard to distinguish which folder was for which textbook. Most of the materials date from 2000-2015.

**Folder No. Contents**

- 18 Publications. Discrete Mathematics. Contract. RESTRICTED. 1982
- 19 Publications. Java Programs for Numerical Analysis. Undated
- 20 Publications. Numerical Analysis/Methods. Algorithms. 2015
- 21 Publications. Numerical Analysis/Methods.Contract and Addendums.1975-2014
- 22 Publications. Numerical Analysis/Methods. Corrections and Comments. 2010
- 23 Publications. Numerical Analysis/Methods. Corrections and Answers. 2010
- 24 Publications. Numerical Analysis/Methods. Corrections and Comments. 2012
- 25 Publications. Numerical Analysis/Methods. Corrections and Comments. Summary of Responses from Reviewers. 2013
- 26 Publications. Numerical Analysis/Methods. Exercise Comments and Corrections. 2014
- 27 Publications. Numerical Analysis/Methods. Corrections. Undated

**BOX 6**

**SERIES III: Publications**

**Folder No. Contents**

- 1 Publications. Numerical Methods. Editions. Problems for 4<sup>th</sup> Edition. 2011
- 2 Publications. Numerical Analysis. Editions. Corrections for 7<sup>th</sup> Edition. 2003
- 3 Publicaitons. Numerical Analysis. Editions. Error and Solutions for 9<sup>th</sup> Edition. 2012
- 4 Publications. Numerical Analysis. Editions. Exercises for 9<sup>th</sup> Edition. 2011
- 5 Publications. Numerical Analysis. Editions. Final Draft of 9<sup>th</sup> SSG Edition. 2010
- 6 Publications. Numerical Analysis. Editions. Old Draft of 9<sup>th</sup> SSG Edition. 2010
- 7 Publications. Numeircal Analysis. Editons. 10<sup>th</sup> Edition Notes. 2013-2014
- 8 Publications. Numerical Analysis. Editions. 10<sup>th</sup> Edition News Release. 2015
- 9 Publications. Numerical Analysis. Editions. 10<sup>th</sup> Edition Sample Exams. 2002-2011
- 10 Publications. Numerical Analysis. Editions. 10<sup>th</sup> Edition Student Solutions Manual. 2015
- 11 Publications. Numerical Analysis. Editions. 10<sup>th</sup> Edition Instrutor's Solution Manual Draft Notes. Undated Pt. 1 of 2
- 12 Publications. Numerical Analysis. Editions. 10<sup>th</sup> Edition Instructor's Solution Manual Draft Notes. Undated Pt. 2 of 2
- 13 Publications. Numerical Analysis. Editions. Instructor's Manual. 2015
- 14 Publications. Numerical Analysis. Editions. International Edition: Answers to Exercises. 2010
- 15 Publications. Numerical Analysis. Exercises. 2014
- 16 Publications. Numerical Analysis. Exercises. New Answers for Back of the Book. 2014
- 17 Publications. Numerical Analysis. Exercises. Draft, 2015. Pt. 1 of 2
- 18 Publications. Numerical Analysis. Exercises. Draft, 2015. Pt. 2 of 2
- 19 Publications. Numerical Analysis. Notes. 2002, undated

**BOX 7****SERIES III: Publications****Folder No. Contents**

- 1 Publications. Numerical Analysis/ Methods Textbook. 2006-2008
- 2 Publications. Numerical Analysis/Methods. Textbook Notes. 2010 undated
- 3 Publications. Numerical Analysis/Methods. Textbook Drafting Notes for Empirical Modeling. 2014
- 4 Publications. Numerical Analysis/Methods. Textbook References and Notes. 2014
- 5 Publications. Numerical Analysis/Methods. Textbook Draft Material. Undated
- 6 Publications. Numerical Analysis/Methods. Textbook Draft Notes Exercises. Undated

- 7 Publications. Numerical Analysis/Methods. Textbook Notes Computer Question Breakdown Revision. Undated
- 8 Publications. Student's Partial Solutions Manual and Software to Accompany N.A.; Brooks Cole Contract. 1991-1996
- 9 Publications. Various. The Distribution of the Eigenvalues of the Discrete Laplacian by Richard Burden and G.W. Hedstrom. 1972
- 10 Publications. Various. A Comparison of Several Methods for Solving Nonlinear Systems by Richard Burden. 1981

#### **SERIES IV: Student Work**

This series is arranged alphabetically for the Math courses and by catalog number for the Computer Science courses. Dr. Burden received his Bachelors from Albion College in 1966. A majority of the student work he kept was from Case Western Reserve University, where he received his Masters in 1968 and his PhD in 1971. Dr. Burden received his Masters in Computer Sciences from the University of Pittsburgh in 1981. Most of the documents contain class notes and a few exams.

#### **Folder No. Contents**

- 11 Student Work. Advanced Differential Equations Notes. Undated
- 12 Student Work. Algebra Courses. Undated
- 13 Student Work. Algebra 2. 1967
- 14 Student Work. Analog Computation. Undated
- 15 Student Work. Analog Computation Problem 1. 1965
- 16 Student Work. Analog Computation Notes. Undated
- 17 Student Work. Analysis. 1967
- 18 Student Work. Approximation Theory. Undated
- 19 Student Work. Complex Variables 262.1967-1968
- 20 Student Work. Complex 262. Undated
  
- 20B Student Work. Differential Equations. Undated
  
- 21 Student Work. Functional Analysis Notes. Undated
- 22 Student Work. Game Theory. Notes. Undated
- 23 Student Work. Numerical Analysis. Undated
- 24 Student Work. Numerical Analysis. Notes. Undated

#### **BOX 8**

#### **SERIES IV: Student Work**

#### **Folder No. Contents**

- 1 Student Work. Numerical Analysis II. 1967

- 2 Student Work. Numerical Analysis II. Notes. Undated
- 3 Student Work. Advanced Numerical Analysis. 1968-1969
- 4 Student Work. Parital Differential Equations. Undated
- 5 Student Work. Partial Differencial Equations. Undated
- 6 Student Work. Probability and Statistics. Notes. Undated
- 7 Student Work. Real Analysis. Notes. Undated
- 8 Student Work. Topology Notes. Undated
- 9 Student Work. Unlabeled Notebook. Undated
- 10 Student Work. C.S. 213 1980-1981
- 11 Student Work. C.S. 215 Algorithms. 1980, undated
- 12 Student Work. C.S. 221. 1980
- 13 Student Work. C.S. 222. 1981
- 14 Student Work. C.S. 221. 1981
- 15 Student Work. C.S. 251. 1981
- 16 Student Work. C.S. 254. Computer Architecture. 1982
- 17 Student Work. Various Exams. 1967-1969
- 18 Student Work. Various, Notes, Papers, Tests. 1971, undated
- 19 Student Work. Unlabeled Undated.

## **SERIES V: Subject Files**

### **Folder No. Contents**

- 20 Subject Files. LISP 1.5 Robert Litwin. 1980
- 21 Subject Files. Notes. 1995-2006
- 22 Subject Files. Project Test Data. Undated
- 23 Subject Files. Singular Value Decomposition Notes. Undated
- 24 Subject Files. Unlabeled Math. Undated
- 25 Subject Files. Various. Undated

## **BOX 9**

### **SERIES VI: Media and others.**

Material which were not really documents and could not fit into folder files fell into this series. It contains media and grade books. The media is made up of floppy discs (most are unlabeled but a few are labled for the Numerical Analysis textbook), and a couple CD which are meant to accompany textbooks as supplemental material. The small grade books date from the 1970s-mid 1990s. They contain last names and grades of students.

### **Contents**

18 - 3.5 floppy discs with most unlabelled. Some labeled with Numerical Analysis  
Textbook material

Approx 5 cds with most as supplemental to textbook material

Grade books from 1971-1973, 1975, 1977, 1982, and 1994 (no personal information  
besides last names were listed)