FROM: THE FACULTY SENATE
From: President Albert W. Brown
Re: Master’s Program in Mathematics.

Moved that the Senate approve the M. A. in Mathematics with the condition that the department’s request for new staff is satisfied and additional library holdings request is granted.

Motion carried.

Signed: [Signature]
Date Sent: 3/14/69
(For the Senate)

To: THE FACULTY SENATE
From: President Albert W. Brown
Re: Decision and Action Taken on Formal Resolution

I. Decision and Action Taken on Formal Resolution
   a. Accepted. Effective Date
   b. Deferred for discussion with the Faculty Senate on
   c. Unacceptable for the reasons contained in the attached explanation

II, III. a. Received and acknowledged
   b. Comment:

DISTRIBUTION: Vice-Presidents:
Others as identified

Distribution Date: 3/17/69

Signed: [Signature]
(President of the College)

Date Received by the Senate:__________
PROPOSAL

MASTER OF ARTS DEGREE IN MATHEMATICS

SUNY at Brockport

February 29, 1969
INTRODUCTION

In recognition of the growing demand for people with training in higher mathematics, and feeling keenly its responsibility both to the University and to the community as a whole, the Mathematics Department of the College at Brockport wishes to offer the degree of Master of Arts in Mathematics.

OBJECTIVES

The primary objective of the Program is to augment the supply of professionally trained mathematicians. This training will consist, in part, of introducing the student to the fundamental mathematical disciplines beyond the undergraduate level in a program of study which is commensurate with the first year of doctoral study. But the goal is to produce not only the knowledgeable but the involved mathematician. Hence, the training and guidance will deal as well with the following:

1. the creation of genuine interest in mathematics for its own sake,
2. understanding of and appreciation for mathematical rigor,
3. connections that exist among the three major branches of mathematics as well as connections that exist between mathematics and the other sciences,
4. opportunities to learn how to locate and to read mathematical works so as to make continued self-improvement possible,
5. opportunities to read and to discuss (and to attempt, perhaps, improvement upon) current published results in mathematics,
6. opportunities to prepare and to present material not only to a sophisticated audience but also to an immature group,
7. the ability to distinguish, for example in a proof, the essential from the inessential, the computational machinery from the key,
8. knowledge of the history of mathematics with some feeling for the continuing change, the flow and movements, in mathematics,
9. opportunities to use the computer as a tool in mathematics so as to recognize firsthand its expanding role,
10. awareness of the mathematical community as a whole, its organizations, its advisory groups, its journals, its leaders.
ADMISSION REQUIREMENTS

A. The requirements of the Office of Graduate Studies are:

1. completion of the baccalaureate degree at an accredited four-year institution,

2. submission of the completed application form,

3. submission of an official transcript of the applicant's undergraduate record,

4. submission of the Graduate Record Examination score.

B. The requirements of the Department of Mathematics are:

1. completion of the equivalent of an undergraduate major in mathematics with an average of B or better. (This usually means a minimum of 30 hours. Deficiencies, which shall be determined by the Departmental Graduate Committee, can be removed at Brockport for no credit.)

2. achievement of a satisfactory score on the Graduate Record Examination including the advanced test in mathematics,

3. submission of two letters of recommendation from individuals who can attest to the applicant's qualifications for graduate study.

C. The decision on each application will be made by the Graduate Committee of the Department of Mathematics. Its recommendation to the Graduate Office will be based primarily on the level of success which can reasonably be predicted from the application.

REQUIREMENTS FOR THE MASTER'S DEGREE

The requirements for the degree of Master of Arts in Mathematics are as follows.

1. Thirty semester hours of course work must be completed. (A maximum of six hours may be allowed as transfer credit by the Graduate Committee.) An average grade of 3 must be earned for all courses taken. Each student will take at least the following:
Real Analysis (MTH 551 and 552) 6 hrs
Abstract Algebra (MTH 521 and 522) 6 hrs
Complex Analysis (MTH 553) 3 hrs
Topology (MTH 554) 3 hrs
Senior Thesis (MTH 591) 3 hrs

Electives (by advisement) 9 hrs
Total 30 hrs

2. A reading knowledge of one foreign language, usually French, German or Russian, must be demonstrated to the Department of Foreign Languages in consultation with the Mathematics Department. The choice of any other language must be approved by the Departmental Graduate Committee.

3. A written (and/or oral) comprehensive examination in mathematics must be passed. The student is expected to demonstrate his ability to integrate the knowledge that he has acquired in different courses.

4. Each student must be enrolled as a full-time student (12 hrs.) for one regular semester (not summer). A graduate assistant can fulfill this requirement by enrolling for 6 hours in each of two consecutive regular semesters.

5. All requirements must be met within four years of the date of admission to degree candidacy but not more than six years from the date of initiation of the graduate program. (A student shall achieve the status of degree candidate by the completion of 6 hours of 500 level courses in mathematics on the Brockport Campus with the grades of A or B.)

THE DEPARTMENTAL GRADUATE COMMITTEE

The initial Departmental Graduate Committee will be appointed by the Chairman of the Mathematics Department. In the future, the committee will be elected by the Graduate Faculty of the Department. The duties of the Departmental Graduate Committee include:

1. accepting or rejecting applicants to the program and making suitable recommendations to the Graduate Office,

2. administering the Comprehensive Examination and making the final pass/fail decision,

3. advising the Chairman of the Mathematics Department on the selection of graduate assistants,

4. determining the date as of which a student is a degree candidate,

5. assigning an academic advisor to each student,

6. making decisions on matters affecting the graduate curriculum.
STUDENT ADVISEMENT

An orientation meeting for the new graduate students will be conducted by the Graduate Committee during the first week of each regular semester in which there is at least one new graduate student. At this time the program will be explained fully, advisors will be assigned and questions will be answered.

At an appropriate later time, information sheets describing the general area of responsibility and format of the Comprehensive Examination will be distributed to the students by the Departmental Graduate Committee.

Specific matters of advisement will be handled by the assigned advisor who will be a graduate faculty member. He will assist the student in organizing a program of study and will review his academic progress periodically.

An effort will be made to keep the student fully apprised of all matters affecting him although the final responsibility for fulfilling requirements rests with the student.
GRADUATE FACULTY MEMBERS

Hou-ta Chen, Ed.D., Geometry and Linear Algebra

Robert E. Hall, Ph.D. in Math expected 6/69,
Algebra and Semigroups

Aziz T. Ibrahim, M.S., Differential Equations and History of
Mathematics

Richard T. J. Mahoney, Ph.D., Algebra and Group Theory

Theron Rockhill, Ed.D. in Math Ed. expected 6/69,
Linear Algebra

Edward O. Stephany, Ph.D., Probability and Statistics

Richard A. Stroud, Jr., M.A., Categorical Algebra

Carol E. Wolf, Ph.D., Symbolic Logic, Foundations of Math and
Recursive Function Theory

Richard J. Pepis, M.A., Computer Science

Norman V. Plyter, M.S., Computer Science

There will be at least one additional new staff member, holding the
Ph.D. degree, joining the department in September, 1969.

Mr. Norman V. Plyter and Mr. Richard J. Pepis of the Department of
Computer Science are presently developing new courses, some of which will
be appropriate for inclusion in the Program.
VITAE OF GRADUATE FACULTY MEMBERS

Name: Hau-ta Chen (Professor of Mathematics)

Education:

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chengchi University, China</td>
<td>B.A.</td>
<td>Political Science</td>
<td>1945</td>
</tr>
<tr>
<td>Pacific University</td>
<td>M.A.</td>
<td>Education</td>
<td>1950</td>
</tr>
<tr>
<td>University of Wyoming</td>
<td>Ed.D.</td>
<td>Education</td>
<td>1952</td>
</tr>
<tr>
<td>New York University</td>
<td>M.S.</td>
<td>Mathematics</td>
<td>1966</td>
</tr>
</tbody>
</table>

Field of special interest: Linear Algebra, Geometry

Teaching experience:

1952-60   LeMoyne College   Memphis, Tenn.  Assoc. Prof. & Prof. of Ed.
1952-60   Tennessee State Univ.    SUC at Brockport  Instructor
1961-     SUC at Brockport

Scientific and professional societies:

Mathematical Association of America
Phi Delta Kappa

Other pertinent data:

N.S.F. Science Faculty Fellow in the Department of Mathematics of SUNY at Buffalo, 1967-68.

Graduate study includes 75 semester hours in mathematics.
Name: Robert E. Hall (Assistant Professor in Mathematics, effective 6/69)

Education:

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennsylvania State University</td>
<td>M.A.</td>
<td>Mathematics</td>
<td>1966</td>
</tr>
<tr>
<td>Pennsylvania State University</td>
<td></td>
<td>[Ph.D. in Math expected 6/69]</td>
<td></td>
</tr>
</tbody>
</table>

Field of special interest: Algebra and Semigroups

Teaching experience:

1964-69 Pennsylvania State University Teaching Ass't

Scientific and professional societies:

American Mathematical Society

Other pertinent data:

Received a National Science Foundation Fellowship for Summer Term, 1967 at Pennsylvania State University.
Name: Aziz T. Ibrahim (Associate Professor in Mathematics)

Education:

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ein Shams Univ., Cairo, Egypt</td>
<td>B.Sc.(Hons)</td>
<td>Mathematics</td>
<td>1953</td>
</tr>
<tr>
<td>Alexandria, Egypt</td>
<td>M.S.</td>
<td>Mathematics</td>
<td>1962</td>
</tr>
<tr>
<td>Ohio State University</td>
<td></td>
<td>Math. Educ.</td>
<td>1962-65</td>
</tr>
<tr>
<td>SunY at Buffalo</td>
<td>Math. Educ.</td>
<td></td>
<td>1966-</td>
</tr>
</tbody>
</table>

Field of special interest: Differential equations, History of Math.

Teaching experience:

1954-60  Alexandria
Secondary School  Alexandria, Egypt  Secondary Teacher  Math

1962-65  Ohio State Univ.
1965-    SUNY at Brockport  Instructor  Assoc. Prof.

Scientific and professional societies:

- Association of Mathematics Teachers of New York State
- Mathematical Association of America
- National Council of Teachers of Mathematics

Other pertinent data:

Presently completing doctoral degree at SUNY at Buffalo.

Graduate study includes approximately 90 semester hours in mathematics.
Name: Richard T. J. Mahoney (Assistant Professor in Mathematics)

Education:

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
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<tbody>
<tr>
<td>Univ. of Buffalo</td>
<td>B.S.</td>
<td>Mathematics</td>
<td>1956</td>
</tr>
<tr>
<td>Univ. of Buffalo</td>
<td>M.A.</td>
<td>Mathematics</td>
<td>1958</td>
</tr>
<tr>
<td>Washington Univ. (St. Louis)</td>
<td>Ph.D.</td>
<td>Mathematics</td>
<td>1963</td>
</tr>
</tbody>
</table>

Field of special interest: Algebra, Group Theory

Teaching experience:

- 1955-57 Univ. of Buffalo
- 1957-58 U.S. Naval Academy
- 1963-68 Syracuse Univ.
- 1968- SUC at Brockport

Scientific and professional societies:

- Mathematical Association of America
- American Mathematical Society
- Pi Mu Epsilon

Other pertinent data:

- Served as Master's Examination Chairman, Syracuse Univ., Fall, 1966 and very familiar with the master's program there.
- Organized and conducted Math Workshops for Parents in Syracuse during the fall of 1965 as a community service for 250 parents.
- Now directing a Syracuse Univ. student in her Ph.D. program in College Teaching.
Name: Theron Rockhill (Assistant Professor in Mathematics)

Education:

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houghton College</td>
<td>B.A.</td>
<td>Mathematics</td>
<td>1959</td>
</tr>
<tr>
<td>Syracuse University</td>
<td>M.S.</td>
<td>Mathematics</td>
<td>1962</td>
</tr>
<tr>
<td>SUNY at Buffalo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Ed.D. degree in Math Ed. expected 6/69]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Field of special interest: Linear Algebra

Teaching experience:

- 1959-61: Newfield Central School
- 1962-: SUNY at Brockport

High School Math
Ass't. Prof.

Scientific and professional societies:

- Mathematical Association of America
- National Council of Teachers of Mathematics
- Association of Mathematics Teachers of New York State
- Phi Delta Kappa

Other pertinent data:

- Awarded a National Science Foundation Science Faculty Fellowship, 1966
- Graduate study includes approximately 70 semester hours in mathematics.
Name: Edward O. Stephany (Mathematics Department Chairman)

Education:

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ. of Rochester</td>
<td>A.B.</td>
<td>Mathematics</td>
<td>1937</td>
</tr>
<tr>
<td>Univ. of Rochester</td>
<td>A.M.</td>
<td>Mathematics</td>
<td>1938</td>
</tr>
<tr>
<td>Cornell University</td>
<td>Ph.D.</td>
<td>Statistics</td>
<td>1956</td>
</tr>
</tbody>
</table>

Field of special interest: Probability and Statistics

Teaching experience:

- 1936-41 Cornell Univ.
- 1945-47 Rochester Public Schools
- 1947- SMC at Brockport

Scientific and professional societies:

- American Mathematical Society
- Mathematical Association of America
- National Council of Teachers of Mathematics
- Association of Mathematics Teachers of New York State
- American Association for the Advancement of Science

Other pertinent data:

- Phi Beta Kappa
- Phi Delta Kappa
Name: Richard A. Stroud, Jr.  (Instructor in Mathematics)

Education:

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trinity College</td>
<td>B.A.</td>
<td>Mathematics</td>
<td>1961</td>
</tr>
<tr>
<td>Yale University</td>
<td>M.A.</td>
<td>Mathematics</td>
<td>1963</td>
</tr>
</tbody>
</table>

Field of special interest: Categorical Algebra

Teaching experience:

1962-63    Yule & Univ. of Rochester (63-67)    Teaching Ass’t.
1965-67    Univ. of Rochester                  Evening Session
1967-       SDC at Brockport                    Lecturer

Scientific and professional societies:

American Mathematical Society
Mathematical Association of America

Other pertinent data:

Currently on leave, completing Ph.D. in Math at University of Rochester
Name: Carol E. Wolf (Assistant Professor in Mathematics)

Education:

<table>
<thead>
<tr>
<th>College</th>
<th>Degree</th>
<th>Major</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swarthmore</td>
<td>B.A.</td>
<td>Mathematics</td>
<td>1958</td>
</tr>
<tr>
<td>Cornell University</td>
<td>M.A.</td>
<td>Mathematics</td>
<td>1962</td>
</tr>
<tr>
<td>Cornell University</td>
<td>Ph.D.</td>
<td>Mathematics</td>
<td>1964</td>
</tr>
</tbody>
</table>

Field of special interest: Symbolic Logic and Foundations of Math; Recursive Function Theory

Teaching experience:

1958-64 Cornell Teaching and Research Asst.
1965-66 Univ. of Illinois Instructor
1968- SUC at Brockport Ass't Prof.

Scientific and professional societies:

Association for Symbolic Logic
American Mathematical Society
GRADUATE COURSES

MTH 412 History of Mathematics
Surveys, in chronological order, significant milestones in the development of mathematics. Each period is treated in the context of its historical development with brief consideration of the biographies of outstanding mathematicians.
Prerequisite: MTH 202 (Calculus II)  3 semester hours
Ibrahim, Chen

MTH 416 Introduction to Mathematical Logic
A study of the propositional and predicate calculus. Boolean algebra is used as the principal example of a mathematical theory.
Prerequisite: MTH 202 (Calculus II)  3 semester hours
R. Stroud, Wolf

MTH 421 Theory of Numbers
Properties of integers, Euclidean Algorithm, prime numbers, divisibility, and congruences.
Prerequisite: MTH 202 (Calculus II)  3 semester hours
Ibrahim, Stephany

MTH 424 Linear Algebra
A study of vector spaces, linear transformations, matrices, determinants, and applications.
Prerequisite: MTH 323 (Modern Algebra)  3 semester hours
Rockhill, R. Stroud

MTH 426 Theory of Groups
The course will begin with many concrete examples of groups, both finite and infinite. Then, an axiomatic development will cover: normal subgroups, homomorphisms, quotient groups, the isomorphism theorems, finitely generated abelian groups, finite nilpotent groups, Sylow Theory, counting principles, the automorphism group.
Prerequisite: MTH 323 (Modern Algebra)  3 semester hours
Mahoney, Hall

MTH 433 Linear Geometry
A study of transformations and their groups in the Euclidean plane, the various spaces - affine, Euclidean and projective - over fields, and axiomatic plane geometry.
Prerequisite: MTH 202 (Calculus II)  3 semester hours
Chen

MTH 441 Probability and Statistical Inference
A study of the nature of probability theory, sample space, combination of events, conditional probability, binomial and Poisson distributions, and the normal approximation to the binomial distribution with applications.
Prerequisite: MTH 121 (College Algebra) or equivalent  3 semester hours
Stephany
MTH 451, 452  
Advanced Calculus I, II
A study of continuous functions, functions of several variables, implicit functions, transformations and mappings, line and surface integrals, improper integrals, power series, and uniform convergence.
Prerequisite: MTH 203 (Calculus III) 3, 3 semester hours
Ibrahim, Rockhill

MTH 454  
Topology
Introduction to the basic notions of topology: topological spaces, continuous functions, compactness, connectivity and separation.
Prerequisite: MTH 451 or MTH 457 3 semester hours
R. Stroud, Wolf

MTH 455  
Differential Equations
Includes ordinary differential equations with applications to problems of engineering, physics, and chemistry.
Prerequisite: MTH 203 (Calculus III) 3 semester hours
Ibrahim, Matheny

MTH 456  
Complex Variables
This course is to serve as an introduction to the more advanced Complex Analysis. Much attention is given to concrete examples and to computational skills. Topics dealt with include: the complex plane, analytic functions, the elementary functions and their geometries, line integrals, Cauchy's Theorem, Cauchy's Formula, power series, residues and poles with applications to the summing of real series and real integrals, conformal mappings.
Prerequisite: MTH 451 or MTH 457 3 semester hours
Ibrahim, Matheny

MTH 457, 458  
Introduction to Real Analysis
Prerequisite: MTH 203 (Calculus III) 3, 3 semester hours
Rockhill, Matheny

MTH 517  
Mathematical Logic
A study of informal logic, predicate calculus, and first order theories.
Prerequisite: MTH 202 (Calculus II) 3 semester hours
Wolf

MTH 521  
Abstract Algebra I
An axiomatic development of groups, rings and modules (including vector spaces) is given. Topics covered include: the Sylow Theorems, Euclidean rings, the Fundamental Theorem on finitely generated modules. The central concept of homomorphism is used throughout. The course is meant to be self-contained although a certain mathematical maturity is assumed.
Prerequisite: MTH 323 (Modern Algebra) 3 semester hours
Matheny, Hall
MTH 522  Abstract Algebra II
The survey of topics begun in MTH 521 is continued here. An axiomatic
development of fields is given and the notion of linear transformation is
explored carefully. Concepts covered include: extension fields, Galois
Theory, solvability by radicals, the algebra of linear transformations,
eigenvalues and eigenvectors, the Jordan and the rational canonical forms.
Prerequisite: MTH 521  3 semester hours
Mohoney, Hall

MTH 531  Foundations of Geometry
Includes curves and surfaces in Euclidean space, surfaces as metric
spaces, groups of motions locally elliptic and hyperbolic metrics, elliptic
geometry and its group of motions, structure preserving transformations, the
affine plane and the projective plane and Gaussian curvature.
Prerequisites: MTH 331 (College Geometry)  3 semester hours
Chen, Ibrahim

MTH 533  Projective Geometry
Cross ratios, projective coordinations, principle of duality,
projectivities, perspectivities, conics and quadratic forms.
Prerequisite: MTH 424  3 semester hours
Chen

MTH 535  Differential Geometry
Differential manifolds, Lie algebra, tensor algebra, connections, local
and global theory of surfaces.
Prerequisite: MTH 431  3 semester hours
Chen

MTH 541  Mathematical Statistics
An introduction to the mathematical principles underlying statistical
inference; includes topics in large samples theory and frequency distributions
on one or more variables.
Prerequisites: MTH 202 (Calculus II) and MTH 441  3 semester hours
Stephany

MTH 551  Real Analysis I
Set Theory, real numbers, Lebesgue measure, integration, and differentation.
Prerequisite: MTH 458  3 semester hours
Staff

MTH 552  Real Analysis II
L^p spaces, Holder and Minkowski inequalities, abstract spaces, general
measure and integration theory.
Prerequisite: MTH 551  3 semester hours
Staff
MTH 553 Complex Analysis
This course offers a detailed account of the theory of complex variables.
Starting with the definition of the field of complex numbers, all theorems encountered are proved (with the exception of certain theorems from real variables which are used without proof). The theorems include: Cauchy's Theorem, the Maximum Modulus Principle, Liouville's Theorem, Rouche's Theorem.
Prerequisite: MTH 458
Mahoney

3 semester hours

MTH 554 Point Set Topology
A study of general topological spaces, product and quotient spaces, imbedding and metrisation, compact and paracompact spaces, and uniform spaces.
Prerequisite: MTH 458
Hall, Wolf

3 semester hours

MTH 591 Mathematics Seminar
Selected readings, problem-solving, presentation of current papers in mathematics.
Prerequisite: Permission of the Department
Staff

3 semester hours

MTH 599 Independent Study in Mathematics
Arranged by the professor in consultation with the Director of Graduate Studies prior to registration.
Staff

2-3 semester hours
As of April 1, 1968, the collection of Drake Memorial Library at State University College at Brockport numbered approximately 154,000 volumes. It also holds over 520,000 microform units and currently subscribes to 1,600 periodical titles. The library presently has an annual book budget of $184,000 and is adding approximately 30,000 volumes per year.

A new library is in the planning process to be ready for occupancy early in 1972. It is assigned to hold 500,000 volumes and seat 2,100 students.

As of November 25, 1968, Drake Memorial Library had 2,098 books in mathematics on the shelf and 752 books on order. The titles cover the full range of scholarly activity in mathematics from Euclid to the frontiers of today. Special emphasis has recently been placed upon acquiring major titles in German and French.

Research and expository periodicals currently received by Drake Memorial Library are listed below.

American Journal of Mathematics
American Mathematical Monthly
American Mathematical Society Bulletin
American Mathematical Society Proceedings
American Mathematical Society Transactions
Annals of Mathematics
Arithmetic Teacher
Canadian Journal of Mathematics
Duke Mathematical Journal
Illinois Journal of Mathematics
Journal of Symbolic Logic
London Mathematical Society Journal
Mathematical Gazette
Mathematical Reviews
Mathematics Magazine
The Mathematics Teacher
Michigan Mathematical Journal
Notre Dame Journal of Formal Logic
Pacific Journal of Mathematics
Philosophia Mathematica
Scripta Mathematica
S.I.A.M. Journal on Numerical Analysis
S.I.A.M. Review

In addition, the Mathematics Department has requested that the following thirty-three periodicals be ordered:

ACTA Mathematica (Hungary)
ACTA Mathematica (Sweden)
Advances in Mathematics
American Statistician
American Statistical Association Journal
American Mathematical Society Memoirs
American Mathematical Society Notices
Annals of Mathematical Statistics
Canadian Mathematics Bulletin
Chinese Mathematics - ACTA
Comptes Rendus
Fundamenta Mathematicae
Inauguralis Mathematicae
Israel Mathematical Journal
Journal de Mathematique Pura et Applique
Journal of Algebra
Journal of Combinatorial Theory
Journal of Differential Equations
Journal of Mathematics and Mechanics
Kyoto University Journal of Mathematics
Mathematical Systems Theory
Mathematical Society of Japan Journal
Mathematische Annalen
Mathematische Zeitschrift
Osaka Mathematical Journal
Quarterly Journal of Mathematics
Royal Society Proceedings Series A
Russian Mathematical Surveys
S.I.A.M. Journal
S.I.A.M. Journal on Applied Mathematics
Soviet Mathematics - Doklady
Topology
Zentralblatt Fur Mathematik und Ihre Grenzgebiete
Title: MTM 517 Mathematical Logic

Outline:

I. Informal Logic: Translation into symbolic logic, informal set theory, truth tables, use of quantifiers, rules for proofs by natural inference

II. Predicate Calculus:
   A. Propositional Calculus: Formulation, deduction theorem, completeness theorem (tautology theorem)
   B. Full Predicate Calculus: Formulation, equivalence theorem, normal forms, equality

III. First Order Theories: Model theory, Gödel's completeness theorem (Henkin's proof), number theory, recursive functions (definition from Turing machines), Gödel's incompleteness theorem

Possible Text: Margaris, A., First Order Mathematical Logic, Blaisdell
Title: MTN 521 and MTN 522 Abstract Algebra I and II

Outline:

I. Set Theory: sets, mappings, relations, equivalence relations, the integers
II. Group Theory: normal subgroups and quotient groups, the isomorphism theorems, Sylow Theory, permutation groups, direct products
III. Ring Theory: ideals and quotient rings, Euclidean rings, chain conditions, the Jacobson radical
IV. Vector Spaces: linear independence, bases, dual space, linear transformations
V. Modules: submodules, quotient modules, finitely generated modules over a Euclidean ring, Abelian groups
VI. Linear Transformations: determinants, eigenvectors and eigenvalues, the Jordan Canonical form, the Rational Canonical form, quadratic forms
VII. Field Theory: finite fields, extension fields, Galois Theory

Possible Text: Herstein, I.N., Topics in Algebra, Blaisdell
COURSE SYLLABUS

Title: MTH 533 Projective Geometry

Outline:
I. Transformations and Invariance
II. Projective Spaces
III. Cross Ratios
IV. Projective Coordinatizations
V. The Principle of Duality
VI. Triangles, Quadrangles, and Quadrilaterals
VII. Projectivities and Perspectivities
VIII. Collineations
IX. Polarities
X. Conics
XI. Quadratic Forms

Possible Text: Levy, H., Projective and Related Geometries, Macmillan
COURSE SYLLABUS

Title: MTH 535 Differential Geometry

Outline:
I. Manifolds
II. Differentiable Structures
III. Tensor Algebra
IV. Lie Groups
V. Frame Bundles
VI. Differential Invariants of Surfaces and Curves
VII. Local and Global Study of Surfaces
VIII. Integration of Forms
IX. Gauss-Bonnet Theorem

Possible Text: Auslander, L., Differential Geometry, Harper and Row
COURSE SYLLABUS

Title: MTH 341 Mathematical Statistics

Outline:
I. Probability Review
II. Frequency functions
   A. Discrete
   B. Continuous
III. Statistical Methods
IV. Frequency Distributions of One Variable
   A. Empirical
   B. Theoretical
      1. Discrete variable
      2. Continuous variable
V. Sampling Theory for One Variable
VI. Bivariate Distributions

COURSE SYLLABUS

Title: MTH 551, MTH 552 Real Analysis

Outline:
I. Set Theory
II. Real Number System
III. Lebesgue Measure
IV. The Lebesgue Integral
V. Differentiation and Integration
VI. $L^p$ Spaces, Hölder and Minkowski Inequalities
VII. Metric Spaces
VIII. Banach Spaces
IX. General Measure and Integrations Theory

Possible Text: Reyden, W. L., *Real Analysis*, Macmillan
COURSE SYLLABUS

Title: MTH 553 Complex Analysis

Outline:

I. Complex Numbers: arithmetic, geometry, linear transformations

II. Complex Functions: elementary functions, topological concepts, analytic functions, conformal mappings

III. Complex Integration: line integrals, Cauchy's Theorem, Cauchy's Integral Formula

IV. Meromorphic Functions: zeros and poles, the Maximum Principle, the Argument Principle, the calculus of residues

V. Power Series: radius of convergence, Taylor series, Laurent series

Possible Text: Ahlfors, L.V., Complex Analysis, McGraw-Hill
COURSE SYLLABUS

Title: MTH 554 Point Set Topology

Outline:
I. Axiom of Choice, Zorn’s Lemma and the Well-Ordering Principle
II. Topological Spaces
III. Separation Axioms
IV. Connectedness
V. Product and Quotient Topologies
VI. Imbeddings and Metrizations
VII. Compactness, Local Compactness and Compactification
VIII. Uniform Topology
IX. Complete Spaces

Possible Text: Kelley, J.L., General Topology, Van Nostrand
COURSE SYLLABUS

Title

MTH 591 Mathematics Seminar

Each class will meet three times per week and be limited to, roughly, ten students. Although the specific activity of each seminar group will be determined by the professor in charge, the objective of each seminar will be the same: it is to give each student a chance to work as a mathematician.

He will be given the responsibility of locating an assigned current paper in the library, working it through and presenting it in clear, lecture form to the rest of the group. He will be encouraged to involve himself with the topic. That is, to find related papers in the library, to attempt improvement of some of the latest results and in consultation with his professor, to submit for publication any significant improvements.