Faculty Handbook of the Mathematics Department

North Dakota State University
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Contents

Part I
Bylaws

Chapter 1
Committees and Officers of the Department of Mathematics

1.1 Standing Committees

The following committees are considered standing committees and shall be formed (as necessary) in accordance with Department policy:
- Search Committee
- PT&E Committee
- Graduate Committee

Members of standing committees may be removed only by a 2/3 plurality vote of the Department.

1.2 Department Committees

The Department Chair shall form such committees as necessary for the execution of Department business. An incomplete list of such committees may include: the Assessment Committee, the Curriculum Committee, the Scholarship Committee and Textbook Committees.

Members of these committees will be appointed by the Chair of the Department on an annual basis, or more often as necessary. Members of Department committees may be removed by the Chair of the Department or a plurality vote of the Department. If the Chair of the Department removes a member of a committee, the Department may reinstate said member by a plurality vote at the next Department meeting.

1.3 Ad-hoc Committees

The Chair of the Department may form ad-hoc committees as necessary to facilitate his or her job. Such committees will only have power to make recommendations to the Chair of the Department or to the Department.

1.4 Officers of the Department

1.4.1 **Chair of the Department**
The Chair of the Department is the primary administrative officer for the Department. Duties and responsibilities of the Chair are described in Chapter 4.

1.4.2 **Other Administrative Officers**
Other administrative officers of the Department (which may include the Graduate Program Director, the Undergraduate Program Director, the Remedial Program Director, and/or the Associate Chair) may be used by the Chair to further the Department's interests. The Chair shall make the duties and responsibilities of such officers explicit and available to all members of the department prior to soliciting nominations for the position. The Chair should solicit nominations for any open officer positions from all members of the department and selection should be done consistent with University Policy. Removal from such positions is done at the discretion of the Chair but such removal must be announced to the department.

Chapter 2
Department Meetings

2.1 Scheduling of Meetings

Regular meetings of the Department will be scheduled to take place on Tuesday during the first full week of the month except as follows:
   • In August and January, the meeting will take place the first full week following the first day of the Semester.
   • No regularly scheduled meetings will take place in May, June or July.
   • If there is no Department business requiring action the regularly scheduled meeting may be canceled.

Other meetings may be called by the Chair of the Department. Adequate notice will be provided at least three calendar days prior to the meeting.

2.2 Publication of Agenda

An agenda will be provided by the Chair of the Department to each faculty member at least three calendar days prior to the meeting. Changes to the agenda may occur between the publication of the agenda and the meeting. Such changes are done at the discretion of the Chair of the Department and should be communicated to the Department as soon as possible.

2.3 Collegiality

Department meetings require collegial behavior on the part of the entire faculty. Disruptive behavior will result in removal from the meeting and other sanctions by the Chair of the Department. To maintain order meetings will be conducted in accordance with the current edition of "Robert's Rules of Order".

2.4 Meeting Participation

While Department meetings are open to all faculty, long term visitors, lecturers, and guests, the Chair of the Department may exclude those who are not tenured or tenure-track faculty at his or her discretion. No tenured or tenure-track faculty member can be excluded from a meeting of the Department except:
   • In accordance with the Department PT&E policy, see Section 6.3.6.
   • When discussing candidates for Chair, see Section 4.3.2.
   • Or the faculty member has been removed for disruptive behavior.

2.5 Minutes

Minutes of Department meetings will be transcribed and provided via e-mail by the Chair, or his or her designee, to the tenured and tenure-track members of the faculty. An archive of Department meeting minutes shall be maintained indefinitely.

2.6 Proxies

In case a member of the Department must be absent from a Department meeting, the absent member may select a member of the Department to serve as their proxy. It is the responsibility of the faculty member giving the proxy to convey the extent of proxy power. It is the responsibility of the faculty member acting as proxy to exercise responsible judgment on the scope of the proxy. No person can serve as a proxy for more than one person at a time.

Chapter 3
Voting

3.1 Types of Votes

There are three standard types of voting in the Department:

Plurality-
In which one option/candidate is being voted on, an option/candidate is declared the winning option/candidate if it receives a majority of the votes cast.

2/3 Plurality-
In which one option/candidate is being voted on, an option/candidate is declared the winning option/candidate if it receives more than the floor of 2/3 of the number of eligible votes.

Preferential-
In which more than one option/candidate is being voted on and or a ranking is desired. This process is described in Section 3.2 below. After the balloting has taken place the Administrative Assistant, or his or her designee, will submit to the Chair of the Department a list of all candidates receiving votes for the purpose of creating a presiding ballot. Once the presiding ballot has been cast the Administrative Assistant, or his or her designee, will provide an electronic record of the ballots cast. The presiding ballot will be noted as such in the electronic record.

3.2 Preferential Balloting

In which V voters are to fill P positions from a slate of C candidates. A majority of the votes cast is required to elect a candidate at each stage.

Balloting-
Ballots will consist of a pre-printed list of the candidates (with empty positions to allow write-in voting). The voters will order the candidates by writing a number next to each candidate they deem acceptable (1 for the preferred candidate, 2 for the next preferred candidate, etc.). Voters may, at their discretion, reject nominees on the slate of candidates (by not writing a number next to a candidate's name) and write in their choices on the ballot according to their preference (being sure to write numbers next to the write-in candidate for ranking purposes). A ballot with fewer or more than C candidates ranked on it may be cast by any voter.

Tallying-
The tally begins by sorting ballots according to who ranks highest on the ballot. A candidate who receives a majority (strictly greater than 50%) of the votes cast is elected and that candidate's name is struck from the slate permanently. If at any stage no candidate receives more than 50% of the initially cast ballots, the candidate(s) who polled the fewest first preference votes is struck for the duration of that stage only. (If all candidates are tied for the fewest first preference votes then the presiding ballot will be used to select one candidate with the other(s) removed for the duration of that stage only). The ballots which were cast for the temporarily struck candidate are recast as above, i.e., ballots for the struck candidate(s) are transferred to other groups according to the highest ranking preference on each transferred ballot for that stage and the ballots will be resorted accordingly. If a deadlock occurs at any stage, the presiding officer's ballot will be used to break the deadlock. This process is repeated until all candidates have been ranked or no remaining candidate appears on a majority of the initially cast ballots.

3.3 Confidentiality

Any member of the Department may call for a confidential ballot. If an eligible voter in the Department is unavailable and a proxy is present, the proxy can vote in place of the missing voter. A confidential ballot will be done as follows:

- An unmarked ballot is given to each voting member of the Department. If the balloting takes place outside of a Department meeting the ballot will be placed in each member's mailbox no later than one day following the calling of the confidential election.
- After completing the ballot, the voter places the ballot in a box provided by the Chair of the Department.
- For voting in a Department meeting the balloting shall end before the meeting is adjourned. For ballots that take place outside of a Department meeting a prescribed ending time may be specified, otherwise the voting will terminate twenty-four hours from the beginning of balloting.
- At the end of balloting the Chair of the Department or his or her proxy will examine the ballots to determine a winner.

3.4 Eligibility for Voting

A voting member of the faculty is a tenured or tenure-track faculty member who is available to participate in the election. A member of the Department who is absent and has not specified a proxy, or who is presented with a conflict of interest in the balloting is not considered a voting member of the faculty for that ballot.

3.5 Presiding Ballot

Except in selecting the Chair of the Department and in promotion and tenure decisions, the Chair of the Department or his or her proxy casts his or her ballot as a presiding ballot. The ballot is not counted with the regular ballots except to break ties in the balloting. For preferential ballots the Chair of the Department may mark candidates/options as unacceptable by marking the candidates/options with an asterisk.

3.6 Standard Votes and Exceptions

The standard balloting procedure will be either plurality or preferential (as appropriate) unless stated otherwise prior to balloting.

Chapter 4
Chair of the Department

4.1 Duties

The duties of the Chair of the Department include representing the Department to the administrative officers of NDSU, administrative tasks as required by the Department, and other duties as described by Department policy.

4.2 Term of Service

Every three years the Department may vote to retain the Chair of the Department. Such vote will happen in the September meeting of the Department. If the vote is negative, then the Department will begin the process of selecting a new Chair.

4.3 Selection of a New Chair of the Department

Selection of a new Chair of the Department begins in the October meeting before a new term. Departmental preference is to select a candidate internally within the department using the method described below. In the event that an external hiring of a chair is required the hiring will be done in accordance with Departmental, College, and University Policy on Hiring (see Chapter 7, below).

4.3.1 **Identification of Candidates**
The Dean of the College of Science and Mathematics or any member of the Department faculty may nominate a candidate for Chair of the Department. The nominee must be willing to serve a term as Chair of the Department. In addition, the nominee must specify the length of term they intend to serve.

4.3.2 **Meeting**
As soon as a suitable list of nominees is available the Department will meet to discuss the nominees. The nominees may make a statement to the Department outlining their candidacy. However, after such a statement the nominee shall excuse themselves from the meeting. After all nominees have left the meeting the Department may discuss the candidates.

4.3.3 **Balloting**
After the meeting a confidential ballot will be distributed on which each tenured or tenure-track faculty member will list one candidate. The current Chair of the Department or his or her proxy will tally the votes. If a candidate receives 2/3 of the eligible votes the candidate will be elected and their term will begin at the end of the term of the current Chair of the Department. If no candidate receives 2/3 of the eligible votes the election will be suspended.

4.3.4 **Suspension of an Election**
If an election is suspended the Department will repeat the process beginning at stage 4.3.2 with the original list of nominees. This time however a candidate will only need 1/2 of the eligible votes to be elected Chair of the Department. If this second series of elections fails to result in a winning candidate the election will fail.

4.3.5 **Failed Election**
If the election fails, the Dean of the College of Science and Mathematics will appoint a current member of the Department to serve as Chair of the Department for a one year term.

4.4 Removal of the Chair of the Department

There are two mechanisms for a Chair of the Department to be removed, to be undertaken only in extraordinary circumstances. The Department may remove the Chair of the Department, or the Dean may remove the Chair of the Department.

4.4.1 **Removal by the Department**

Notice of an impeachment hearing must be provided to the Department, the Chair of the Department, and the Dean of the College of Science and Mathematics. Included with the notice should be the signatures of at least half of the tenured faculty members; these signatures indicate that the signatories have reason to remove the Chair of the Department from office. A meeting of the Department will be called at least one week after impeachment notice is provided, and no more than two weeks after said notice is provided.

The Dean of the College of Science and Mathematics (or his or her proxy) will attend the meeting. The meeting will be held in a manner consistent with disciplinary hearings as described in the current edition of "Robert's Rules of Order".

Following the meeting a confidential ballot will be supervised by the Dean of the College of Science and Mathematics or his or her proxy. If a majority is in favor of retaining the Chair of the Department the Chair of the Department shall continue otherwise the Chair of the Department will be immediately removed from office and an election shall be called to elect a new Chair of the Department.

Any further attempts to remove the Chair of the Department while they continue to serve their term will proceed as above except that the Notice of Impeachment will require the signatures of at least 2/3 of the tenured faculty members in the Department.

4.4.2 **Removal by the Dean**

The Dean may remove the Chair of the Department for cause. In such instances the Dean will call a meeting of the Department (not to occur within 72 hours of notice of the meeting). At the meeting the Dean will provide rationale for removing the Chair of the Department. After the meeting the Department may vote to keep the Chair of the Department. This requires a 2/3 majority of the tenured faculty members of the department.

4.4.3 **Interim Chair of the Department**

In the event that the Chair of the Department is removed, or is no longer able to serve as Chair of the Department, the Dean of the College of Science and Mathematics shall select (within one week) an interim Chair from within the Department to serve until a successful election is held.

Chapter 5
Amendments

5.1 Changes to the Bylaws

Changes to the Bylaws Part of this document must be approved by a 2/3-majority vote of the voting faculty. Notice of a proposed change to the bylaws must be given at least one week prior to the vote. A Department meeting shall occur between notice of the proposed change and the actual voting.

5.2 Changes to the Policies

Changes to the Policies Part of this document require a majority vote of the voting faculty. No special notification of the change needs to precede the vote.

Part II
Policies

Chapter 6
Promotion, Tenure, and Evaluation (PT&E)

6.1 Introduction

This chapter describes the policy and procedures for Faculty evaluation at all ranks in the Department of Mathematics. Evaluation indicators are outlined in Section 6.4.3. Criteria and procedures for evaluations related to promotion and tenure are outlined in Sections 6.3, 6.5.2, 6.4.1, and 6.4.2. Procedures for the annual faculty evaluation are outlined in Section 6.5.1

6.2 References

1. SBHE Policies 605.1, 605.2, 605.4, 605.5
2. NDSU Policies 350.1, 352, 350.2, 350.4, 353, and
3. College of Science and Mathematics Policy and Procedures for Promotion and Tenure Evaluation

6.3 Promotion, Tenure, and Evaluation Committee

The PTE Committee consists of three members. Only tenured faculty members who have completed three years of full-time appointment with the university are eligible for election to the PTE Committee. Faculty holding administrative appointments as defined by NDSU policy 352 Section 5.3 are not eligible for election. Faculty members are not eligible to serve on the PTE Committee in a year where a current or former immediate family member applies for tenure and/or promotion: parent by birth or adoption, spouse, partner, son or daughter by birth or adoption, stepchild, brother or sister by whole or half blood or by adoption, brother-in-law, sister-in-law, or son-in-law or daughter-in-law.

The term of the PTE Committee assignment is one calendar year, beginning on June 1st. Elections are held in spring semester for the committee to serve the following term.

Nominations can be made by any member of the faculty. A minimum of three nominations must be made. Unless otherwise decided by the department, preferential ballot is used. Following the election, the Committee members will elect a Committee Chair and report the results of the election to the Chair of the Department.

PTE committee members are required to complete NDSU's PTE committee training, when available.

6.4 Criteria and Indicators

6.4.1 Criteria for Tenure and/or Promotion from Assistant Professor to Associate Professor

The indicators for these criteria are given in Section 6.4.3.

1. **Research.** The candidate must exhibit a strong, independent research program.

2. **Teaching.** The candidate must demonstrate a record of excellence as an instructor in all courses taught by that instructor and successful advising of students.

3. **Service.** The candidate must contribute to the governance of the department, the college, the university, and/or the profession.

4. **Collegiality.** The candidate must interact collegially with other faculty members.

6.4.2 Criteria for Promotion from Associate Professor to Full Professor

The level of performance for promotion to professor substantially exceeds that required for promotion to Associate Professor. There must be a recognizable growth in leadership capabilities and overall professional standing. The indicators are outlined in Section 6.4.3.

1. **Research.** The candidate must exhibit a strong, independent, sustained research program.

2. **Teaching.** The candidate must demonstrate a sustained record of excellence in teaching, advising, and related instructional activities. In addition, the candidate will take a leadership role in improving the teaching, advising and other instructional activities of the department, college, and/or university.

3. **Service.** The candidate must contribute to and play a leadership role in the governance of the department, the college, the university, and/or the profession.

4. **Collegiality.** The candidate must interact collegially with other faculty members.

6.4.3 Evaluation Indicators

Research

1. The primary research indicator has been and continues to be peer-refereed[1] research articles accepted for publication. A modifier that may be used for measuring quality of a peer-refereed research article is the perceived quality of the journal[2] in which the paper appears.

2. A secondary research indicator is the solicitation of external support for the research program. A faculty member who has successfully obtained grant support need not continue to apply while their grant is ongoing. The impact of grants on other activities[3] may be considered as evidence of quality research.[4] (It is expected that every faculty member submits a research and/or teaching grant proposal to an external agency on average at least once every two years, including collaborative proposals as a PI or co-PI.) Evaluations of research will not be affected negatively by unsuccessful attempts to seek external funding.

3. For tenure and/or promotion applications, a secondary research indicator is the evaluation of the candidate's research accomplishments by external reviewers.

4. A secondary research indicator is presentation and participation in professional meetings and invitations to other institutions for research collaborations[5]. Factors that may be used in evaluating this measure will include: the length and type of the talk and

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[1] The publication of non-refereed papers and non-research papers will play neither a primary nor a secondary role in evaluating a faculty member's research.

[2] Because the quality of journals/conference proceedings/book chapters can be uneven, refereed papers in journals, conference proceedings, or peer-reviewed book chapters will be considered on a case-by-case basis with the potential for consultations with people both within the department and externally.

[3] Such as: support for students, REU grants, conference grants, etc.

[4] By external we are considering ND EPSCoR, NSF, NSA, the Simons Foundation, Department of Education, and other granting agencies. Internal grants may include Instructional Development Grants through the Provost's Office, Departmental and College Sources, and/or funds through other NDSU entities.

[5] It is assumed that invitations for speaking in seminars and colloquia at other institutions are potentially collaborative, even if such collaboration is not presently resulting in publishable work.

the type of meeting/collaboration. Additionally, receiving funds to travel (either from the University[6] or from external sources) may also be used as an indicator.

5. A secondary research indicator is successful mentoring of graduate students. However, in accord with the 2005 AMS statement "Directing Ph.D.Theses"[7] , tenure-track faculty are not expected to supervise graduate students. Evaluations of research will not be affected by an absence of graduate students.

6. Awards for research papers, research presentations, and research programs may also be used as a secondary research indicator.

7. The list of secondary indicators is not intended to be exhaustive and faculty may present further activities for consideration.

Teaching

1. The primary teaching indicator is quality of instruction measured through review of regularly scheduled courses taught by the faculty member. This review may include: a review of narrative summaries produced in a peer review of teaching; observations from classroom visits by the Chair; a review of student comments from SCES forms; numerical data resulting from the annual SCES evaluations. Faculty members are expected to engage in peer review as described in Section 11 of the Faculty Handbook of the Mathematics Department.

2. A secondary teaching indicator is participation in teaching development activities. This may include participation in pedagogical luncheons and teaching seminars both locally and otherwise. Other activities may include development, assessment, and/or maintenance of innovative teaching strategies.

3. A secondary teaching indicator is active participation in assessment activities for the department. This should include, at minimum, working with the assessment committee to facilitate their activities. In addition, continued ongoing assessment of student learning is expected, as described in Sections 11 of the Faculty Handbook of the Mathematics Department.

4. A secondary teaching indicator is solicitation of support for teaching related activities from external and/or internal sources[8]. It is expected that every faculty member submits a research and/or teaching grant proposal to an external agency on average at least once every two years, including collaborative proposals as a PI or co-PI.) Evaluations of teaching will not be affected by unsuccessful attempts to seek funding.

5. A secondary teaching indicator is successful supervision of undergraduates in their senior seminar project.

6. A secondary teaching indicator is leading graduate seminars and/or graduate reading courses.

7. Awards for teaching may also be used as a secondary teaching indicator.

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[6] This includes travel money provided through competitive programs from local sources such as the Provost's travel grants, the NDSU development foundation, and others.

[7] See Appendices.

[8] By external we are considering ND EPSCoR, NSF, NSA, the Simons Foundation, Department of Education, and other granting agencies. Internal grants may include Instructional Development Grants through the Provost's Office, Departmental and College Sources, and/or funds through other NDSU entities.

8. The list of secondary indicators is not intended to be exhaustive and faculty may present further activities for consideration.

Service Activities

1. The primary service indicator will be the participation in service activities as assigned by the Chair. Factors that may be used in evaluating department service assignments include willingness to participate and successful completion of the assigned task. In committees that involve multiple people it is also important that each individual is contributing appropriately. The Chair may evaluate this through discussions with members of the committee and/or others in the department.

2. Serving in college and university committees is encouraged and is valued as a secondary measure in evaluating service. For probationary faculty, having no service in college or university committees will not be a dispositive factor in evaluation of service.

3. A secondary service indicator is service to the profession. Some factors which will be used in determining this include: participating in reviewing of research papers and grant proposals, participating in committees for national societies, membership on editorial boards for professional journals, and/or organizing conferences and/or special sessions at conferences.

4. A secondary service indicator is participation in outreach activities. Types of outreach activities[9] include (but are not limited to): engaging students and/or teachers from area schools in mathematical activities; working with area schools to enhance student preparedness for college; assisting in established outreach activities[10]; engaging the broader community in mathematical discussion.

5. A secondary service indicator is serving on graduate student committees across campus and assisting students and faculty across campus requesting technical or professional information.

6. Awards for service may also be used as a secondary service indicator.

7. The list of secondary indicators is not intended to be exhaustive, and faculty may present further activities for consideration.

Collegiality

1. A faculty member will contribute to a positive work environment through cooperation and collaboration with others by developing and maintaining good working relationships with other faculty, staff, employees, and students.

2. On annual evaluations, collegiality is evaluated as "Satisfactory" or "Not satisfactory". The evaluation "Not satisfactory" must describe specific lapses.

6.5 Procedures and Guidelines

6.5.1 Procedure for the Annual Faculty Evaluation

1. The Chair of the Department performs an annual evaluation of all faculty members. The annual evaluation process normally starts by mid-January and is completed by May 1. Evaluation will be done in terms of each faculty member's position description and

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[9] In outreach activities the faculty member should be acting as a representative of the Math Department.
[10] This includes assisting faculty members whose service assignment includes the indicated activity, e.g., Sonia Kovalevsky Day, the Math-In, the Tri-College math exam, Governor's School, science fair judging, etc.

encompasses the areas of instruction, research, and service as outlined in Section 6.4.3. The time allocation of each faculty member to each of these areas is described in her/his position description.

2. During each academic year the Chair of the Department will also meet with each probationary faculty member to discuss her/his progress toward promotion/tenure. The Chair of the Department will provide in the evaluation report an outline of progress toward promotion/tenure.

3. Each faculty member submits to the Chair of the Department an updated List of Goals and Accomplishments summarizing his/her contributions in each of the areas of evaluation outlined in Section 6.4.3. The length and content of the list will be determined by the Chair of the Department who will notify the faculty members in a timely manner.

4. The Chair of the Department will develop an evaluation report for each faculty member. This report will be based on the list of goals and accomplishments, and other relevant evidence in regards to the faculty member's position description and assignments over the year in the areas outlined in Section 6.4.3.

5. Each faculty member receives a copy of her/his own evaluation, signed by the Chair of the Department. The faculty member has the right to request a meeting with the Chair. Any such meeting must take place within 14 calendar days of receiving a copy of his/her evaluation. After this meeting the faculty member has one week in which he/she may prepare a letter in response to the evaluation report of the Chair.

6.5.2 Procedure for Pre-Tenure Review

1. Under normal circumstances, during the third year of continuous service, the PTE Committee will conduct a pre-tenure review. Each faculty member will be assessed in the areas outlined in Section 6.4.3 for evidence of potential success in application for tenure.

2. During the pre-tenure review year, the candidate will present to the Chair of the Department and the PTE Committee his/her portfolio prepared in accordance with the NDSU Guidelines for Promotion and Tenure and Section 4.2 of the College of Science and Mathematics Policy for Promotion and Tenure Evaluation. The portfolio needs to be submitted to the Chair (with copies to the Committee members) at least two months in advance of the due date set by the College of Science and Mathematics.

3. The PTE Committee shall prepare a pre-tenure review report; independently the Chair of the Department shall prepare his/her pre-tenure report. In accordance with college policy Committee and Chair may discuss the candidate's application. Signed copies of these are provided to the candidate at least 14 calendar days before the portfolio is due at the Dean's office. It is the candidate's responsibility to add these copies to the portfolio.

4. In accordance with NDSU Policy 352.6.4, the candidate will have 14 calendar days to append a response to the reports from the Chair and from the PTE Committee.

5. The candidate shall forward the portfolio to the Dean of the College of Science and Mathematics and the College PTE Committee, according to the timeline provided by the Dean's office.

6. It is the responsibility of the candidate to ensure that all college and university deadlines for the portfolio are met.

6.5.3 Guidelines for Applications for Tenure and Promotion Together or Separately

1. The most common case is the promotion from Assistant Professor to Associate Professor with tenure. There is no mechanism to tenure an Assistant Professor without promotion.

2. Although consideration for promotion from Assistant Professor to Associate Professor will normally accompany consideration for tenure, a candidate who exceeds the criteria of Section 6.4.1 may be considered for early promotion (by which we mean promotion not coinciding with a corresponding application for tenure).

3. For a candidate who is already an Associate Professor by reason of recent appointment or early promotion, the criteria for tenure are those outlined in Section 6.4.1. For a candidate who is already a Professor by reason of recent appointment or early promotion the criteria for tenure are those outlined in Section 6.4.2.

6.5.4 Procedure for Tenure and/or Promotion Review

1. The identification of candidates is done in accordance with College policy (see Section 4 of Policy and Procedure for Promotion and Tenure, College of Science and Mathematics), or by request from the candidate.

2. Candidates should be evaluated according to the criteria and indicators from Section 6.4.

3. The candidate must submit the names of at least six individuals to serve as external referees no later than June 1st of the summer prior to the academic year of decision/deliberation. The Chair of the Department and the Department PTE Committee may suggest other referees and they must approve the selected referees. At least 3 letters are to be solicited for the candidate's portfolio. All of the solicited letters that are provided to the Chair will be included in the candidate's portfolio. Referees will be informed of the ND Open Records law when letters are solicited. Every effort will be made to ensure that 3 letters are included in the portfolio, including soliciting other letters if necessary. In the event that fewer than 3 letters are provided an explanation should be included in the Chair's Promotion and Tenure report.

4. The candidate shall prepare a portfolio in accordance with the NDSU Guidelines for Promotion and Tenure and Section 4 of the College of Science and Mathematics Policy for Promotion and Tenure Evaluation. It must include all of the relevant material, including all of the candidate's annual reviews by the Chair of the Department (or the Dean of the College for any years in which the faculty member going up for promotion and/or tenure served as Department Chair). (Course syllabi should not be included in the portfolio.)

5. The portfolio shall be submitted to the Chair (with copies to the Committee members) at least two months in advance of the due date set by the College of Science and Mathematics. If the faculty member being considered for tenure and/or promotion is the Chair of the Department the portfolio will be submitted to the Chair of the Department PTE Committee.

6. Following the Department's deliberation on the candidate's case, from which the candidate and any others with a conflict of interest are excluded, the Chair of the Department will circulate an anonymous ballot to all voting members of the department requesting each voting faculty member to vote "yes" or "no" to the question(s) of tenure and/or promotion. The candidate for promotion and/or tenure, first-year faculty, faculty undergoing the tenure/promotion process during the same year, and faculty with a conflict of interest as defined in NDSU Policy 352.5.5 are not eligible to participate in the discussion nor to vote. This vote of the faculty is considered to be advisory to the departmental PTE committee. If the faculty member being considered for

tenure/promotion is the Chair of the Department, the Chair of the Department PTE Committee will circulate the ballot and tabulate the results.

7. A voting faculty member will be one who has an at least 50% full time, tenure-track/tenured position in the Department of Mathematics and who has been in such a position for at least one full academic year. In the situation when a faculty member is unable to participate in the voting process, due to unavoidable circumstances such as leave, illness, or conflict of interest, she/he will not be considered a voting faculty member for the purposes of tallying the vote. Conflict of interest will include, but not be limited to, being the spouse or partner of the person being considered for promotion and/or tenure (see also NDSU Policy 352-5-5).

8. To determine the advice of the faculty an election quota will be used. To calculate the quota, multiply the number of eligible voting faculty members by 2/3 and round up to the nearest whole number. If the number of yes votes is greater than or equal to the quota, the advice of the voting faculty will be in favor of tenure and/or promotion. If the number of yes votes is less than the quota, the advice of the faculty will be against tenure and promotion.

9. Following the advisory vote of the voting faculty, the Department PTE Committee will meet in private to discuss the candidate's tenure and/or promotion. At the conclusion of this meeting, the committee will vote on the candidate's tenure and/or promotion. If at least two members of the committee vote in favor of tenure and/or promotion, the Committee will recommend tenure and/or promotion.

10. The PTE Committee will prepare a Promotion and Tenure report; independently the Chair of the Department will prepare a Promotion and Tenure report. In accordance with College policy the Committee and Chair may discuss the candidate's application. Signed copies of these reports are provided to the candidate at least 14 calendar days before the portfolio is due at the Dean's office. It is the candidate's responsibility to add these copies to the portfolio. If the faculty member being considered for tenure/promotion is the Chair of the Department then the chair/head evaluation shall be performed by a current or former faculty member who has had experience as a chair/head but is not currently a direct report of the individual being evaluated. The dean, in consultation with the candidate and the departmental PTE committee chair, shall select the individual that will provide the evaluation (see also College PTE Policy 4.5.2.1).

11. In accordance with NDSU Policy 352.6.4, the candidate will have 14 calendar days to append a response to the Chair and PTE Committee reports.

12. The candidate shall forward the portfolio to the Dean of the College of Science and Mathematics and the College PTE Committee, according to the timeline provided by the Dean's office.

13. It is the responsibility of the candidate to ensure the completeness of the portfolio and that all college and university deadlines for the portfolio are met.

6.6 Appendix

Included are relevant copies of the AMS statements regarding the culture of the discipline of mathematics from http://www.ams.org/profession/leaders/culture/.

2004 Statement
The Culture of Research and Scholarship in Mathematics:
Joint Research and Its Publication

The culture of joint research and its publication differs among disciplines, and this essay is meant to explain that culture for mathematics. In most areas of mathematics, joint research is a sharing of ideas and skills that cannot be attributed to the individuals separately. The roles of researchers are seldom differentiated (in the way they are in laboratory sciences, for example). Determining which person contributed which ideas is often meaningless because the ideas grow from complex discussions among all partners. Naming a "senior" researcher may indicate the relative status of the participants, but its purpose is not to indicate the relative merit of the contributions. Joint work in mathematics almost always involves a small number of researchers contributing equally to a research project.

For this reason, mathematicians traditionally list authors on joint papers in alphabetical order. An analysis of journal articles with at least one U.S. based author shows that nearly half were jointly authored. Of these, more than 75% listed the authors in alphabetical order. In pure mathematics, nearly all joint papers (over 90%) list authors alphabetically.

These traditions differ from other areas of scholarship, especially those that frequently involve large numbers of researchers working on a single research project. In areas of mathematics that are more closely associated to such areas, the culture and traditions may blend together.

While these traditions are well-known to mathematicians, they are often misunderstood by other scholars whose traditions differ. Occasionally, this works against young mathematicians—especially those with names near the end of the alphabet.

2005 Statement
The Culture of Research and Scholarship in Mathematics:
Directing Ph.D. Theses

In some disciplines, directing dissertations is an integral part of a research program for every scholar, both young and old. In mathematics, however, this is not the case; it is unusual for a young (untenured) mathematician to direct Ph.D. students. As in other disciplines, a pre-tenured mathematician must focus on establishing a research program, including the publication of his or her research. Helping an advisee mature into an original researcher is labor-intensive and, unlike in the laboratory sciences, does not necessarily further the advisor's own research program. In addition, the advisor provides students with problems which, in many instances, he or she would otherwise solve and publish.

There is no tradition of joint publication of dissertation work, even when the advisor makes a substantial contribution, and this means fewer publications for the advisor -- something that may be a liability when facing a tenure review. In a recent review of new mathematics Ph.D.'s from mid-2003 to mid-2004, at most 3% of the advisors were untenured even though the untenured (but tenure-eligible) faculty account for 16% of the total tenure-eligible faculty in doctoral mathematics departments. The overwhelming proportion of tenured faculty among thesis advisors is not the case in some other disciplines, where young researchers are expected to attract large numbers of graduate students to demonstrate the vitality of their research program.

Thus, there are subject-specific cultural reasons for mathematics faculty who are facing tenure decisions not to have advised any thesis students. While these facts are well known to mathematicians, they are often misunderstood by other scholars who carry out research in a different culture.

2006 Statement
The Culture of Research and Scholarship in Mathematics:
Rates of Publication

Mathematics is often considered as part of the physical and natural sciences, but its publication practices differ from these other disciplines in several fundamental ways. Mathematicians tend to publish at rates

that are modest compared to some other sciences. The majority of mathematical research is published in refereed research journals rather than conference proceedings or books. The mathematical literature is spread among a wider collection of journals than in most related fields. And, since an article typically represents a mature treatise on a mathematical question, and since mathematics research is not considered time-sensitive, delays in publication are common.

Even some of the best young mathematicians publish relatively few papers. A study of the 40 mathematicians winning Sloan Fellowships in 2005-2006 shows that 70% published an average of two or fewer articles per year in the five years preceding their award. Even more senior mathematicians have modest publication rates. Of the 22 mathematicians receiving Guggenheim Fellowships from 2002-2006, half published an average of two or fewer articles per year in the five years preceding their award. These two groups represent an exceptional group of highly productive mathematicians. Of the 274 publications by these Guggenheim Fellows, 75% were in refereed journals. Only three publications were books. In fact, of all items covered by Mathematical Reviews in the years 2001-2005, fully 80% were from refereed journals.

When judging the work of most mathematicians, the key measure of value for a research program is the quality of publications rather than rate. The information above about those who have won prestigious awards strongly supports this view.

2008 Statement
The Culture of Federal Support for Academic Research in Mathematics[11]

Academic research in mathematics, like research in engineering and the life, physical, and computer sciences, is financially supported by foundations, industry, and the Federal government. Approximately 70% of the external funding available for academic research in these fields comes from the Federal government, down somewhat from 80% thirty years ago. Most Federal funding for mathematical research comes from the National Science Foundation (NSF), the Department of Defense, the Department of Energy, and the National Institutes of Health. The NSF accounts for nearly 70% of the Federal support for academic research in the mathematics, and is the only agency that supports all branches of the mathematical sciences.

Amongst doctorate holders employed in academia, 66% of mathematicians describe research as a primary or secondary activity, quite like the 68% of physical scientists, and the 70%of computer and life scientists who make such a report. Nonetheless, a much smaller proportion of academic mathematicians are supported by the Federal government. In 2006, across all fields of science, 46.9%of those employed in academia received Federal support for their research: 56.3%of physical scientists, 43.9%of computer scientists and 57.9% of life scientists, as compared to 34.8% of mathematicians.

As compared to other natural sciences, there is also a large disparity in the per capita level of funding available to mathematicians. In FY2006, across all fields of science and engineering, the Federal government provided about $260,000 per academic researcher. By field, this breaks down to $360,000 per academic researcher in Computer Science, $140,500 per academic researcher in the Physical Sciences, and $430,000 per academic researcher in the Life Sciences. By contrast, in 2006 the Federal government provided about $47,000 per academic researcher in Mathematics.1

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[11] In these calculations the numerator comes from Appendix table 5-4: Expenditures for academic R & D, by field, and the denominator from the "Research" section of Appendix table 5-26: S&E doctorate holders employed in academia reporting teaching or research as primary or secondary work activity, by type of position and degree field: 1973–2006. Both tables are found in the NSF report: Science and Engineering Indicators 2008, found online at http://nsf.gov/statistics/seind08/pdfstart.htm.

When compared to other fields of science and engineering, opportunities for external funding in mathematical sciences are very limited. The vast majority of mathematicians receiving Federal support have just one, single investigator, NSF grant. These grants typically provide salary support for one, or two summer months, and some funds for travel. Almost no support is available for course release time, and there is limited support for graduate students, post-docs or equipment. Many well respected, productive mathematicians receive little or no external support for their research.

2009 Statement
The Culture of Research and Scholarship in Mathematics:
Citation and Impact in Mathematical Publications

A scientist's publication record is the basic ``statistic'' on which promotion, salary and funding decisions are made. In many fields the number of citations to a work, the order of authorship, and impact factor of the journal, are used as proxies for expert evaluation. For a variety of reasons, mathematicians have not embraced the impact factor as a reliable indicator of a journal's quality. Indeed, there are documented cases where unscrupulous editors have dramatically inflated the impact factors of entirely undistinguished journals; in one case the IF exceeded that of all journals published by SIAM, save for the SIAM Review.[12]

As in many other things, the cultural norms within mathematics are quite different from those in other fields of science. For example, the authors of a mathematical paper are almost always listed alphabetically by surname; all authors are assumed to have made substantive intellectual contributions to the work.

Several issues combine to require careful consideration of publication cultures before understanding and using citation statistics in Mathematics. Mathematics articles tend to be longer, including more detail and exposition (to allow readers to reconstruct arguments with ease), and to be more idiosyncratic in approach (including special examples, and new proofs of known results) than in other disciplines; this requires longer writing times. They also tend to require a longer period to read and digest properly; both refereeing times and first citation times can be an order of magnitude longer.[13]

Citations tend to be focused and targeted to specific required results rather than being used as a broad survey of the field. It is becoming increasingly common for papers on the oft-used, but unrefereed, preprint archive, arXiv.org, to be accepted as citations in published work. Citations of unpublished, but well known, manuscripts have been accepted in mathematical journals for decades, which may also contribute to the lower level of citations to published work. Relative to other fields of science, all of these factors tend to shorten the publication list and citation statistics of senior mathematicians.

These citation practices may contribute to the relatively low impact factors of even the most prestigious mathematical journals, as compared to those in other fields.[14] Other reasons for this disparity are the relatively small size of the mathematical community, that many core mathematical journals are not included in the computation of the impact factor,[15] and the fact that 90% of the citations for a

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[12] See Integrity under attack: the state of scholarly publishing, Douglas N. Arnold, SIAM Review, December 2009.
[13] In 1992, the average time to publication in math journals was 600 days. H.A. Abt, Publication practices in various sciences, Scientometrics, Volume 24, Number 3 / July, 1992, DOI 10.1007/BF02051040, Pages: 441-447.
[14] The highest IFs for Math journals are about 2.5, as compared to 15 for Science and Nature, and 35 for New England Journal of Medicine.
[15] Citation Statistics, a report of the IMU-ICIAM-IMS, by Robert Adler, John Ewing, and Peter Taylor, June 2008. Available at http://www.ams.org/ewing/Documents/CitationStatistics-FINAL-1.pdf

mathematical paper occur more than two years after its publication, (and therefore are not counted in the IF).[16]

As in other fields, there is a fairly good consensus within the mathematical community of the relative merits of most major journals; this ranking plays a much larger role in assessing the publication record of an individual than the IFs of the journals. While a mathematician's publication record is considered in determining his/her standing, much greater weight is placed on the substance of the work itself, and its impact on the subject, as assessed by experts within the field, than on the number of citations to that work, and the IFs of the journals in which it appears.

2012 Statement
The Culture of Research and Scholarship in Mathematics:
The Structure of Graduate Programs

Although mathematics is very closely associated with the natural sciences, the structure of mathematics graduate programs differs from those of other scientific disciplines in several fundamental ways. These include the transition from coursework to research, the advisor's role, and funding sources.

Due to the richness and maturity of the mathematical sciences, graduate students typically require two to three years of post-baccalaureate course work before reaching the frontiers of the discipline, choosing an advisor, and beginning dissertation research. During the years of coursework, beginning graduate students typically are advised via departmental structures – such as a committee, a vice chair, or a nominal faculty advisor - rather than a dissertation advisor or major professor.

The role of the dissertation advisor of a mathematics graduate student differs from that of an advisor in the natural sciences, especially laboratory sciences. It is often the case that the student's dissertation work is independent work, which broadly supports the advisor's research direction but may not contribute directly to the advisor's current research project. Accordingly, dissertation advisors are sometimes coauthors of publications arising from doctoral theses, but not always. Advising a graduate student in mathematics may not contribute to the advisor's research output to the same degree as it does in other sciences.

Degree program requirements for undergraduate majors in science and engineering create high demand for mathematics instruction taught in lecture/recitation format, and therefore a high demand for graduate teaching assistants. On the other hand, federal agencies support a smaller fraction of active researchers in the mathematical sciences compared to the physical and biological sciences[17]; the awards support a smaller proportion of graduate students[18] and rarely provide more than partial support[19]. Consequently, mathematics students are typically supported as teaching assistants by the department rather than as research assistants by the major professor[20].

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[16] For example, the two-year 2006 IF of the Annals of Mathematics, arguably the most prestigious journal in the field, is 2.43, while the four-year IF is 4.28, and the 25-year IF is 24.82.

[17] See http://www.nsf.gov/statistics/seind12/append/c5/at05-22.pdf,
http://www.nsf.gov/statistics/seind12/append/c5/at05-24.pdf

[18] See http://www.nsf.gov/statistics/seind12/append/c2/at02-06.pdf

[19] Based on average award size, see http://dellweb.bfa.nsf.gov/awdfr3/default.asp

[20] Data from the National Center for Science and Engineering Statistics (NCSES). See table
http://www.nsf.gov/statistics/seind12/append/c2/at02-05.pdf

2013 Statement
The Culture of Research and Scholarship in Mathematics:
Undergraduate Research in Mathematics

The role of undergraduate research in mathematics has features which distinguish it from similar activities in other disciplines. These differences should be understood in evaluating the participation of mathematics departments and individual mathematicians in undergraduate research.

Both demand and opportunities for undergraduate research (UR) in mathematics have increased steadily in recent years, and there is currently much excitement in the mathematics community about supporting these types of activities[21], which include independent study on research projects during the academic year; organized and externally supported research activities during the summer; and informal summer research experiences run by individual faculty. These can be a powerful way to draw students into mathematics. Simultaneously, there is growing pressure from universities on faculty in all STEM disciplines to engage undergraduates in research, in order to recruit, and then retain, the best students.

One salient aspect of UR activities is that it primarily is a teaching effort on the part of faculty, not a research one.[22] Undergraduate research in mathematics is not an automatic side effect of faculty research and is usually a major undertaking for a faculty member. It usually takes 2-3 years to bring PhD students from a solid knowledge of the undergraduate curriculum to a level at which they can, even with considerable supervision, engage in mathematical research; bringing an undergraduate to the forefront of research is very unusual. Opportunities for such UR are unevenly distributed across subfields. While some UR activities have been spectacularly successful in having students participate in truly original research, and such outcomes are highly appreciated by the discipline, this is not considered the norm.

A related issue is that there is a difference between mathematics and laboratory disciplines, where students at various levels of knowledge and competency can contribute to a faculty member's own research program. In mathematics, such positive effects on faculty productivity, although not unknown, are rare.

In summary, UR requires concentrated and highly time-consuming faculty effort, which comes in addition to the duties of teaching, advising, and faculty research, and which often does not further the faculty member's research agenda. This means that, in deciding whether or not to supervise undergraduate students in research, a faculty member will need to weigh the benefits (to the students, the institution and possibly themselves) against the costs to their other professional obligations.

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[21] See http://www.ams.org/notices/201208/rtx120801112p.pdf. The documents http://www.ams.org/programs/edu-support/undergrad-research/PURMproceedings.pdf and http://www.ams.org/programs/edu-support/undergrad-research/REUproceedings.pdf provide a non-exhaustive list of research experiences for undergraduates programs and information about how they run.

[22] Much of this Statement is informed by the responses to a CoProf survey. Of the department chairpersons contacted, 72% stated that undergraduate research is viewed as primarily a teaching effort, 16% as primarily a research effort, and 12% did not state an opinion

Chapter 7
Hiring

7.1 Filling a Tenured or Tenure-Track Faculty Position

When a tenured or tenure-track faculty position is to be filled the Chair of the Department obtains initial approval from the administration to begin the process to fill the position.

7.1.1 **Selection of Specialty**
At the first Department meeting following the announcement of a search, a preferred specialty for the position(s) will be selected subject to the following:
- If approval of the position entails a specific research specialty effort will be made to fill the position with someone of the indicated research specialty.
- If the position does not have a research specialty attached to it then the Department will choose a preferred research specialty through a voting process chosen by the Department.

7.1.2 **Search Committee**
After selecting a preferred research specialty an election for a search committee will occur. After the committee members are elected they will meet and choose:
- a search Committee Chair
- a student to serve on the committee, preferably a graduate student
- faculty members external to the Department, if any, who should serve on the committee as non-voting members (no more than two external faculty members may serve on the committee).

The search committee will comply with all NDSU policies regarding faculty position searches. In addition to compliance with University policy the committee is tasked with the following:
- Write a position description and have it approved by the appropriate University representatives
- Coordinate submission of the advertisement to the AWM Newsletter, mathjobs.org, and other outlets as appropriate.
- Set dates for initial screening, position closing, and reporting to the Department.
- Begin initial screening
- Communicate with the Department concerning the applications and the search process.

7.1.3 **Initial Selection**
Following the closing date for the position and initial screening by the Search Committee a Department meeting is called. At this meeting the Search Committee as well as members of the Department will suggest a short list of candidates to be interviewed by telephone. After a discussion of this short list a ballot may be necessary to decide which candidates will be interviewed by telephone.

7.1.4 **Pre-campus Interviews**
Following selection of a list of candidates to interview by telephone (or Skype or other technology) the Search Committee will schedule interviews each candidate on the list. These interviews are open to all faculty members, will be conducted by speaker phone (or other appropriate speaker technology), and will be recorded so that interested faculty who cannot attend may listen to the interviews later. Each candidate will be asked a fixed set of questions as determined by the Search Committee. Following the telephone interviews the Search Committee will report at a meeting of the Department their recommendation. The recommendation should be either to schedule phone interviews with other candidates or to invite some of the candidates who have already been interviewed by phone for on campus interviews. The Department will then vote on the recommendation of the Search Committee.

7.1.5 **On-Campus Interviews**

The Search Committee will schedule the visits of the candidates. Each candidate shall be given the opportunity to (note that this list is not exhaustive):
- Give a colloquium talk
- Meet with as many members of the Department as possible (including, faculty, staff, and lecturers)
- Meet with the Dean of the College of Science and Mathematics
- Meet with graduate and undergraduate students.

The committee will schedule office visits and meals with the candidate.

7.1.6 **Selection of Candidates**
Following the on-campus interviews for a position, the Department shall meet and discuss how to proceed. If it is felt that suitable candidates have been found a confidential preferential ballot will be used to rank the candidates, as described in Chapter 3.

7.1.7 **Offers**
Following the ranking of the acceptable candidates the Chair of the Department will make offers and negotiate with candidates in accordance with the ranking provided by the Department.

7.1.8 **Paperwork**
The Search Committee shall arrange for all paperwork required by NDSU to be filed in a timely manner.

7.1.9 **Positions with Tenure**
Tenure and/or tenure credit will only be granted to candidates in accordance with University policy and after consultation with the Department PT&E Committee. To be awarded tenure the candidate should meet departmental standards as described in Department policy.

7.2 Filling an External Chair Position

In the event that an external search for Chair of the Department is required the search will be conducted in accordance with University and College Policy.

7.2.1 **Chair Search Committee**
The Chair Search Committee will be formed by the Dean of the College of Science and Mathematics. The committee will contain at least three tenured or tenure-track faculty from within the Department and a student from the Department. At least two thirds of the committee will consist of the total number of tenured and/or tenure track faculty from the Department and the student representative from the Department.

7.2.2 **Identification of Candidates**
Members of the Department should be proactive in suggesting and recruiting qualified individuals for the position.

7.2.2 **Initial Selection/Pre-campus Interviews**
Following the closing date for the position and initial screening by the Chair Search Committee, references for each candidate will be contacted and interviewed by members of the Chair Search Committee. In addition, one person not listed as a reference for the candidate will be contacted and interviewed. The Committee may also interview the candidates via telephone (or Skype or other technology).

7.2.3 **On-campus Interviews**
Following the pre-campus interviews the Chair Search Committee may invite candidates for on-campus interviews. Each candidate shall be given the opportunity to (note that this list is not exhaustive):
- Give a colloquium talk

- Meet with as many members of the Department as possible (including, faculty, staff, and lecturers)
- Meet with the Dean of the College of Science and Mathematics
- Meet with graduate and undergraduate students.

The committee will further this interaction through scheduling of office visits and meals with the candidate.

7.2.4 **Selection of Candidates**

Following on-campus interviews the department will meet to discuss the candidates. Following the meeting a confidential ballot will be cast in which each member of the department will vote on acceptability of each candidate. The results of this ballot will be made available to the Chair Search Committee. The Chair Search Committee will then forward a list of candidates that are acceptable to the Dean of the College of Science and Mathematics, along with a summary of each candidate's strengths and/or weaknesses and a summary of the Department's discussion and vote. No candidate that the Department or Committee finds unacceptable will be forwarded to the Dean as an acceptable candidate.

7.2.5 **Offers**

The Dean of the College of Science and Mathematics will make offers and negotiate with candidates in a manner consistent with the decisions of the Department and of the Search Committee.

7.2.6 **Tenure**

No candidate for Chair of the Department that does not meet the qualifications for tenure in the Department of Mathematics can be considered for the position of Chair of the Department.

7.3 Filling a Post-doctoral Position

The PD Committee (Chair, graduate student, and faculty member) will

- Write a position description and have it approved by the appropriate University representatives
- Coordinate submission of the advertisement to the AWM Newsletter, mathjobs.org, and other outlets as appropriate.
- Set dates for initial screening, position closing, and reporting to the Department.

When the date for initial screening is passed the applications will be made available to all faculty. Each faculty member will have the option of proposing a candidate (from the applications available) that they want considered for the position. It is not expected that every faculty member will propose a candidate for the position. The faculty member on the committee shall recuse themselves if they propose a candidate. If the pool of proposals is less than ten, additional proposals (up to two more) may be submitted by a faculty member.

The proposal should be a short, less than two-page (single space, 10pt font) document that outlines:
a) how the proposed candidate will further the faculty members research;
b) how the proposed candidate will enhance the department's research and teaching capabilities;
c) the potential of the candidate to impact diversity and department climate in a positive way; and
d) a mentoring plan for the proposed candidate with regard to teaching, research and professional development.

Proposals may be prepared jointly when the proposed candidate will have an impact on multiple faculty members' research.

The PD Committee will arrange telephone interviews with the proposed candidates that will be recorded so that every person has a chance to hear the interviews. The proposals will also be made available to the department faculty. At this point the Department will meet to discuss the candidates and will initiate a preferential ballot to select the top four candidates with regard to item (a-d) above.

The Chair (or the Chair's designee) will then fill the position based on the feedback from the department.

Additional considerations the Chair may use in awarding a postdoctorate:
- Diversity
- Candidates with no postdoctoral experience are preferred
- Faculty who have previously hosted (or are currently hosting) a postdoc have lower preference than those who have not.
- Annual evaluations of a faculty member will carry some weight in awarding a proposal.

7.4 Filling a Non Tenure-Track Faculty Position

The Chair of the Department, in consultation with the Department will fill non tenure-track faculty positions (including Professor of Practice positions, as necessary). When possible such positions should be filled via a national search. In the event of an urgent need this consultation may occur via e-mail. The Chair of the Department shall make all efforts to find qualified candidates and shall follow NDSU policy.

7.5 Filling a Lecturer Position

The Chair of the Department may fill Lecturer positions only after consultation with the Department. In the event of an urgent need this consultation may occur via e-mail. The Chair of the Department shall make all efforts to find qualified candidates, and shall follow NDSU policy.

Chapter 8
Travel, Visitors, and Developmental Leave

8.1 Authorization for Travel and Reimbursement

An authorization to travel form must be completed prior to the date of travel if reimbursement is expected. Reimbursement from Departmental funds is only allowed if the Chair of the Department has approved Department funds for travel.

8.2 Course Substitutions

When faculty, lecturers, or graduate students will miss teaching a class due to travel the Chair of the Department and the Department Secretary will be provided information concerning how the missed classes will be handled. This may include information about substitutes and or makeup days.

8.3 Short-term Visitors

Visitors to the Department staying less than two months and receiving $2500 or less support from NDSU are considered short-term visitors. The Chair of the Department handles proposals for short-term visitors. The Chair of the Department will advise faculty of commitments for short-term visitors.

8.4 Long-term Visitors

Visitors to the Department staying more than two months or receiving more than $2500 in support from NDSU are considered long-term visitors. A proposal for a long-term visitor must be submitted by the Department member(s) with whom the visitor would work. Proposals are submitted to the Chair of the Department and will be reviewed by an ad-hoc committee created by the Chair of the Department. The committee will recommend a course of action to the Chair of the Department.

8.5 Department Mini-conferences

The Department of Mathematics, when funding is available will support mini-conferences. When funds are available, the Chair (or designee) will solicit proposals for the conferences; individuals or groups may submit the proposals. The proposal will include tentative dates, topic and tentative speakers, approximate number of participants, and indication of additional sources of support, if applicable. In determining whether to award funds for a mini-conference the Chair will task a committee to consider the following:
1. The merits of the proposal.
2. The benefit of the mini-conference to the whole department.
3. The benefit of the mini-conference to graduate students in the department.
4. The proposed budget and the likelihood of a successful mini-conference.
5. The distribution of mini-conferences over the past five years (as appropriate).

The committee will submit a ranked list to the Chair who will, following the list, select a mini-conference and provide support, consistent with the overall department budget.

Chapter 9
Teaching Loads and Course Assignments

9.1 Faculty Teaching Loads

The standard faculty teaching load consists of at most 2 regular courses per semester (3 or 4 credit courses numbered between 146 and 789). The Chair of the Department may make reasonable exceptions to this typical load through negotiation with the affected parties. Reading courses, seminars, and other non-regular courses are considered service and will not count toward the typical teaching load.

The Chair of the Department will solicit input in preparing the course schedule, but the Chair of the Department may exercise discretion in scheduling and course assignments.

9.2 Lecturer Teaching Loads

A lecturer's teaching load will be described in the contract signed by the Chair of the Department. The Chair of the Department will assign courses to lecturers as negotiated in the contract. Lecturers will not teach courses numbered above 147.

9.3 Graduate Student Teaching Loads

New graduate teaching assistants (GTAs) will be assigned two Calculus recitations.

GTAs that have successfully completed the semester-long First Year Graduate Seminar (that includes classroom visits) will be eligible to teach their own section of a course.

GTAs that have successfully completed their written preliminary examinations and the semester-long First Year Graduate Seminar (that includes classroom visits) may be eligible to be Teaching Fellows as needed by the Department. TFs will receive a larger stipend than GTAs. Their renewal is contingent on satisfactory progress towards graduation and Departmental need.

Time spent in the Tutor toom and/or grading will be included in the computations of a Graduate student teaching load. The overall time commitment for a TA may not exceed 18 hours per week. The overall time commitment for a TF may not exceed 20 hours per week.

Exceptions to this policy shall be approved by the Chair of the Department in consultation with the Graduate Committee.

9.4 Summer School

Teaching in the summer sessions is optional for all instructors and appropriate compensation will be provided, consistent with University policy.

9.4.1 **Assigning Summer School Courses**
The following list will be used as a priority list in assigning a first summer school course (i.e. no person will be assigned a second summer course until all requests for first courses have been met):
- Assistant professors that are not receiving grant support for summer salary.
- Graduate teaching assistants and teaching fellows.
- Associate and Full professors that are not receiving grant support for summer salary.
- Lecturers.
- Faculty members not included in the previous.

9.4.2 **Graduate Student Shadowing**

Graduate Teaching Assistants and Teaching Fellows who will be teaching a summer course that they have not taught before will be required to "shadow" an instructor teaching the course in the preceding spring semester. Such shadowing should include: discussions concerning course content and preparation of syllabi, discussions concerning writing and grading of exams, regular class attendance, and at least one practice lecture in the course.

Chapter 10
Course Policies

10.1 Courses with Recitation

In courses with a recitation the instructor is responsible for supervision of recitation instructors. This includes providing guidance to recitation instructors, reviewing quizzes and/or examinations written by recitation instructors, supervising grading of examinations by recitation instructors, and visiting recitations and providing feedback to the recitation instructors. At the end of the semester the course instructor will provide a written evaluation of the recitation instructors to the Chair of the Department.

10.2 Examinations, Grading, and Course Grades

Students shall receive assessment prior to the last day to drop a course. Once the final examination in a course has been administered a student can do no further work to improve their grade unless prior arrangements have been made and the assigning of the grade Incomplete is consistent with NDSU policy. In courses numbered below 165 the type and number of examinations is set after consultation with the Chair, the course supervisor, and the instructors teaching the course.

Instructors shall never post examinations and grades by name, social security number, or student identification numbers. It is the instructor's responsibility to ensure that grades are submitted by the deadline determined by the University.

10.3 Special Topics and Reading Courses

Special topics and reading courses for undergraduates should be used for material that is distinct from the material in a regularly numbered course.

10.4 Credit by Examination

Students in area high schools who are enrolled in Calculus at their schools may request to take the final examination in Math 165 at the regularly scheduled time. Students earning a grade of B or better, as determined by the instructor, will be given placement into Math 166 and will be awarded 4 credits for Math 165 if they subsequently enroll at NDSU.

10.5 Course Content and Syllabi

Copies of syllabi for each course offered by the Department will be kept on file by the Department Secretary for at least four years. The content of each course taught will be consistent with that described in the official NDSU Bulletin unless prior approval from the Chair of the Department has been received. Syllabi will be written consistent with University Policy.

10.6 Text Selection

For courses numbered higher than 266, the instructor is responsible for choosing a text that covers the material listed in the official NDSU Bulletin. Selection shall be done in a time frame that allows for an adequate number of texts to be ordered. For courses numbered 266 or below a textbook committee shall select an appropriate text. The bookstore will be advised not to carry solutions manuals for textbooks in use by the Department.

10.7 Outside of Class Exam Policy

Exams offered outside of the regularly scheduled class times must comply with the following:
- A schedule, including date and time, of such examinations will be included on the syllabus for the course.
- A make-up exam must be made available to students who miss the examination for a University Sanctioned Activity (in particular for students who have a regularly scheduled course during the scheduled exam).
- In the event of a school closure on the scheduled date of an exam the Instructor will make reasonable accommodations in rescheduling the exam.

For the purposes of this policy take-home examinations and final examinations offered consistent with University policy are not considered outside of class exams.

10.8 Course Reduction Policy

A pool of course reductions (which may vary in size from year to year) will be allocated to faculty annually. To be eligible for a course reduction a faculty member must meet or exceed expectations in all areas of research, teaching, and service during the previous two years (as measured in annual evaluations). The following guidelines will be used by the chair in assigning course reductions as needed.

In assigning course reductions, the faculty should be roughly prioritized according to the following four groups (in order of highest priority first):
- Tenure track-faculty within three years of an expected tenure decision, but not applying for tenure during the current academic year.
- Tenure track faculty in their first semester.
- Faculty with tenure.
- All other tenure-track faculty.

Other factors that will affect prioritization will include:
- A faculty member who was offered a course reduction during the previous 12 months but requested a postponement will have highest priority.
- A faculty member who has received a course reduction in the last five semesters will have lower priority than a faculty member who has not.
- Faculty with special opportunities that clearly benefit the faculty member and the department may have increased priority.

The Chair of the Department will make all decisions with regard to awarding course reductions.

The awarding of course reductions will not change the expectations for tenure and/or promotion.

This policy does not apply to course reductions as part of negotiated contracts (i.e. those faculty with administrative appointments) or for course reductions awarded through a competitive process (e.g. through a FORWARD course release grant). In addition, such reductions will not impact a faculty members' priority when awarding course reductions consistent with this policy.

10.9 Selection of Undergraduate "Topics" Courses

Every year the Department will offer one to two topics courses for undergraduates. These courses will typically be offered as either "Topics in Algebra and Discrete Mathematics" (Math 439), "Topics in Geometry and Topology" (Math 449), "Topics in Analysis" (Math 459), or "Topics in Applied Mathematics" (Math 485). Math 483 and Math 489 or any other course that is not included in the regular rotation can also be offered as one of these topics courses.

If a faculty member is interested in teaching such a course in the upcoming academic year then they should submit a short proposal to the curriculum committee describing the proposed course by the first Friday in October. The committee will consider all of the proposals and forward recommendations to the chair. The recommendations will include information about the following factors:

- Potential enrollment,
- Appropriateness of content for 400 level,
- Potential duplication.

Based on these recommendations the Chair, in consideration with the overall schedule will select up to two of the courses each academic year. Considerations will include other faculty commitments and maintaining a rotation of topics courses to ensure a diversity of options for students (i.e. offering two courses with the same number in a two-year period would be unlikely).

10.10 Required Credentials for Teaching Mathematics Courses

The following general guidelines apply when assigning mathematics courses to instructors. Note that these are guidelines and there is no warranty that individuals will be assigned to teach courses they are eligible to teach. Exceptions may be made at the discretion of the chair, consistent with University and Graduate School policy.

- Postdoctoral, visiting, tenured and tenure-track faculty: Eligible to teach all courses offered by the department.
- Mathematics graduate teaching assistants and teaching fellows: Eligible to teach all courses numbered less than or equal to 270 with adequate supervision.
- Individuals with a Master's in Mathematics (that are not currently graduate teaching assistants or teaching fellows): Eligible to teach all courses numbered less than or equal to Math 147.
- Individuals with a Bachelor's degree in Mathematics and at least three semesters of relevant teaching experience (in College-level or high school level- mathematics courses): Eligible to teach Math 98.
- Undergraduate mathematics and mathematics education students with junior standing: Eligible to teach Math 98 with adequate supervision.

10.11 Administrative drops for non-participation

To decrease F and W grades for students who stop attending classes the department will institute a policy of dropping students who have not regularly participated in class prior to the last day for no-record drop of classes. Each course will include the following (or equivalent) statement on the syllabus:

"Students who miss more than 20% of classes or more than 20% of assignments prior to the "Last day for no-record Drop of classes" may be administratively dropped from the course at the discretion of the instructor."

It will be the responsibility of the instructor to maintain adequate records of participation and prepare a list of administrative drops for the administrative staff person to be implemented on the "Last day for no-record Drop of classes".

10.12 Late Enrollment

Undergraduate students who wish to enroll in a mathematics course after the deadline to add classes via Campus Connection and before the deadline to add full semester classes are required to complete the following procedure.

1. Provide a letter explaining the request for the late add.
2. Provide a letter from the student's advisor with supporting statements regarding the student's potential to succeed in this class.
3. Obtain instructor consent.

4. Provide a plan on how to make up the missed material (requires instructor agreement).

In addition, for a course taught by a graduate student as primary instructor:

5. Obtain department chair consent

Chapter 11
Course Evaluations

11.1 Mid-term Evaluations

All instructors are encouraged to allow their students to participate in midterm evaluations. These evaluations shall be anonymous and used by the instructor to improve their teaching. Faculty members are also required in each calendar year to conduct a formative assessment of a course they are teaching; this evaluation may be designed so that specific criticisms can be addressed and necessary adjustments made.

11.2 Student Course Evaluation Survey (SCES) Forms

Each semester every instructor is required to participate in the University Course Evaluation Survey (SCES). The CES is an integral element in the evaluation of the quality of instruction in the Department and the University. The relevant procedures are as follows:
- The Department secretary will work with the institutional process to send electronic survey information for students enrolled in department courses.
- Instructors will encourage their students to participate in the online surveys.
- The results of the surveys will be provided to the Chair, including all comments and numerical summaries of the associated data.
- After review the comments and numerical surveys will be provided to individual instructors.

11.3 Peer Review

11.3.1 **Timeline for Peer Review**
Tenured and Tenure-track faculty will participate in peer-review at least once every other year. Participation in the University Peer Review of Teaching can substitute for Department Peer Review and faculty are encouraged to occasionally participate in the University Peer Review of Teaching.

11.3.2 **Procedure for Peer Review**
The peer review of faculty should consist of:

- A meeting of the peers to discuss their teaching goals, strategies, strengths, and weaknesses. In addition, faculty are encouraged to share their syllabi, exams, quizzes, student evaluations and other classroom material
- Classroom observation on at least two occasions
- A meeting discussing the results of the classroom observation, as well as suggestions for continued growth in teaching.
- A sample peer review instrument is included in Appendix A.

11.3.3 **Reporting**
A report summarizing the activities of the reviewer, as well as an assessment of the instructor will be provided to the Chair of the Department as well as to the individual faculty member. This report shall include a discussion of the strengths of the instructor, room for continued growth, and suggestions for improvement.

Chapter 12
Graduate Program Policies and Handbook

12.1 Graduate Committee

Voting members of the Graduate Committee are the Graduate Recruiting Chair and the four graduate members at-large. Non-voting members are the Chair of the Department and Associate Chair. The Graduate Recruiting Chair will be appointed by the Chair of the Department. The graduate members at-large are elected for two-year terms at a regular meeting of the Department. The terms will begin in January and will alternate so that each year two members carry over.

The duties of the Graduate Recruiting Chair include chairing the Graduate Committee, working with the Chair to coordinate and recruit for TA and TF positions and departmental graduate student awards, and organizing the orientation for new TAs which occurs prior to the fall semester. Duties of the Graduate Committee as a whole include selection of recipients for financial aid, recommending admission to graduate study, advising new TAs who have not yet selected an advisor, assisting the Graduate Recruiting Chair in the orientation sessions as needed, and recommending and enforcing policies regarding the graduate program.

12.2 General Information

The Master of Science degree is offered in three options: the Thesis Option, the Comprehensive Study Option, or the Exam Only Option. The Thesis Option emphasizes research and preparation of a scholarly thesis. The Comprehensive Study Option emphasizes a broader understanding of a major area of mathematics. The Exam Only Option is for students who are enrolled in the Ph.D. program.

12.3 Master's Degree Programs

The Master of Science degree is offered in three options: the Thesis Option, the Comprehensive Study Option, or the Exam Only Option. The Thesis Option emphasizes research and preparation of a scholarly thesis. The Comprehensive Study Option emphasizes a broader understanding of a major area of mathematics. The Exam Only Option is for students who will continue to earn a Ph.D. in the program.

12.3.1 **Departmental Requirements for Thesis Option or Comprehensive Study Option**
1. At least 30 credit hours in approved graduate-level mathematics course work, depending on the degree option.
> Thesis Option:
> At least 6 credit hours of Math 798 (Master's Thesis), in addition to at least 18 credit hours in courses numbered 700-789, 800-889. These 18 credit hours must include six foundational courses as described in Subsection 12.5.1.
> Comprehensive Study Option:
> At least 2 credit hours of Math 797 (Master's Paper), in addition to at least 24 credit hours in courses numbered 700-789, 800-889. These 24 credit hours must include six foundational courses as described in Subsection 12.5.1.

Subject to the approval of the supervisory committee, at most 6 of the required 30 credits may be earned in 600-level mathematics courses (excluding 620, 621, 650, and 651) or in courses outside the Mathematics Department.
2. A grade of Master's Pass in two of the written preliminary examinations offered by the department. See Subsection 12.5.5.
3. A thesis or expository paper written under the supervision of a faculty member and defended at an oral examination administered by the student's supervisory committee. See Subsection 12.5.7.

12.3.2 **Departmental Requirements for Exam Only Option**

1. At least 30 credit hours in approved graduate-level mathematics course work. At least 21 credit hours in courses numbered 700-789, 800-889. These 21 credit hours must include six foundational courses as described in Subsection 12.5.1.
Subject to the approval of the supervisory committee, at most 6 of the required 30 credits may be earned in 600-level mathematics courses (excluding 620, 621, 650, and 651) or in courses outside the Mathematics Department.
2. A grade of Ph.D. Pass in four of the written preliminary examinations offered by the department. See Subsection 12.5.5.
3. A passing grade in a preliminary oral examination administered by the student's supervisory committee after completion of the written preliminary examinations. See Subsection 12.5.5.
4. See Subsection 12.4.3 for notes about this option.

12.3.3 **Departmental Requirements for MS Double-Major** (Thesis Option or Comprehensive Study Option Only)

1. At least 24 credit hours in approved graduate-level course work, depending on the degree option.
   Thesis Option:
   At least 3 credit hours of Math 798 (Master's Thesis), in addition to at least 15 credit hours in courses numbered 700-789, 800-889. These 15 credit hours must include four foundational courses as described in Subsection 12.5.1.
   Comprehensive Study Option:
   At least 1 credit hour of Math 797 (Master's Paper), in addition to at least 18 credit hours in courses numbered 700-789, 800-889. These 18 credit hours must include four foundational courses as described in Subsection 12.5.1.
Subject to the approval of the supervisory committee, at most 6 of the required 40 credits may be earned in 600-level mathematics courses (excluding 620, 621, 650, and 651) or in courses outside the Mathematics Department.
2. A grade of Master's Pass in two of the written preliminary examinations offered by the department. See Subsection 12.5.5.
3. A thesis or expository paper written under the supervision of a faculty member and defended at an oral examination administered by the student's supervisory committee. See Subsection 12.5.5. In addition to that, the research is to be interdisciplinary (as required by graduate school policy) and one of the co-chairs of the supervisory committee must be a faculty member of the Department of Mathematics.

12.3.4 **Timelines**

A student has three calendar years from the time of enrollment in the Graduate School to complete the Master's degree. Extensions may be granted after review and approval by the Graduate Committee, subject to Graduate School Policy.

12.4 Doctoral Degree Program

The Doctor of Philosophy degree is awarded in recognition of high scholarly attainment as evidenced by a period of successful advanced study, the satisfactory completion of prescribed examinations, and the development of an acceptable dissertation covering a significant, original aspect of mathematics.

12.4.1 **Departmental Requirements**

1. A total of at least 90 credit hours in approved graduate-level mathematics course work, including:
(a) At least 42 credit hours in courses numbered 700-789, 800-889 or as approved by the supervisory committee. These 42 credit hours must include six foundational courses as described in Subsection 12.5.1. The advisor should in consultation with the Chair of the Graduate Committee ensure that the 42 credit hours contain a broad spectrum of courses (at least 12 credit hours) outside the student's area of emphasis as well as depth in a specific area of mathematics.
(b) At least 3 credit hours of Math 790 (Graduate Seminar), excluding the following: First Year Graduate Seminar, Professional Development Seminar, and any preliminary examination "boot camps".

(c) At least 6 credit hours of Math 899 (Doctoral Dissertation).

Subject to the approval of the supervisory committee, at most 12 of the required 42 credit hours may be earned in 600-level mathematics courses (excluding 620,621, 650, and 651) or in courses outside the Mathematics Department. Credits used to satisfy the requirements of a Master's degree at NDSU may be included in the 90 credits hours required for the Ph.D. A student entering the Doctoral program with a Master's degree from another institution need only complete 60 credit hours to complete the Ph.D. degree. Half of these 60 credits must be in courses numbered 700-789, 800-889.

2. A grade of Ph.D. Pass in four of the written preliminary examinations offered by the department. See Subsection 12.5.6.

3. A passing grade in a preliminary oral examination administered by the student's supervisory committee after completion of the written preliminary examinations. See Subsection 12.5.6.

4. A dissertation consisting of a written presentation of original and significant research completed by the student under the supervision of a faculty member and defended at an oral examination administered by the candidate's supervisory committee. See Subsection 12.5.7.

5. A dissertation video describing the candidate's research, evaluated by the candidate's supervisory committee. See Subsection 12.5.9.

12.4.2 **Timelines**

Ph.D. students have through the January Preliminary Exams during their third year in the program to demonstrate proficiency in basic areas of mathematics by passing the written Preliminary Examinations. In the Spring semester of the third year the department committee will meet to discuss any candidates who have not completed their written preliminary examinations and make one of three recommendations:

- If the students have earned a master's pass on two exams, then they will be granted an additional year in the program to complete a Master's degree. Whether they are able to complete the Master's degree or not they will be removed from the program after the additional year.
- If the committee determines that the student is not making adequate progress, the student's funding (if any) will terminate at the end of the academic year, and they will have one year to complete a Master's degree. Whether they are able to complete the Master's degree or not they will be removed from the program after the additional year.
- If the committee determines that an extension of the timeline is appropriate, then written notice will be given outlining what the student must accomplish by a specified date to continue receiving funding and/or remain in the program.

Advisors are strongly encouraged to meet with the student in the Spring of the second year to discuss progress and develop an action plan for the student to successfully complete their written preliminary examinations in a timely fashion.

A student advances to candidacy after completion of the oral preliminary examination. All students must advance to candidacy by August 31 after their fourth academic year of study. Extensions may be granted after review and approval by the Graduate Committee, subject to Graduate School Policy. Any decisions that end in the removal of a student from the program are subject to appeal consistent with Graduate School Policy.

12.4.3 **Procedures for M.S. by Exam**

Ph.D. students that advance to candidacy may be eligible to to earn an M.S. degree by exam; see Subsection 12.3.2 for requirements. Interested students should choose the Ph.D. + Masters option from the drop down menu on the Doctoral Degree Plan of Study and on the Request to Schedule Examination. After students have completed the M.S. requirements, they should complete the Exit Survey and the Degree Application. A link to these items will be emailed to them by the Graduate School. Students exercising this option will be eligible to participate in commencement ceremonies for the M.S. and Ph.D. separately.

12.5 Policies on Graduate Degrees

12.5.1 **Foundational Courses**

These courses teach fundamental concepts needed for breadth and for preparation to conduct research in a particular area. Choosing from the following lists, students have two options:

    Algebra: (1) MATH 720, 721; (2) MATH 720, 726

    Analysis: (1) MATH 750, 754; (2) MATH 750, 756

    Applied Mathematics: (1) MATH 760, 784

    Combinatorics: (1) MATH 736, MATH 737

    Geometry/Topology: (1) MATH 746, 747

    Option 1: Graduate students must pass three foundational sequences. Students may choose one sequence each from three of the above lists.

    Option 2: Graduate students must pass two foundational sequences plus two additional foundational courses. Students may choose one sequence each from two of the above lists. Students will then choose one course each from two of the remaining lists.

For students pursuing an MS double-major, the options are as follows:

    Option 1: Graduate students must pass two foundational sequences. Students may choose one sequence each from two of the above lists.

    Option 2: Graduate students must pass one foundational sequence plus two additional foundational courses. Students may choose one sequence from one of the above lists. Students will then choose one course each from two of the remaining lists.

12.5.2 **Supervisory Committee**

Every entering graduate student will be assigned a designated member of the Graduate Committee who will advise them until the student has selected a research advisor. Prior to completing or immediately following completion of the written portion of the preliminary examinations the student will take on a major advisor who will supervise the student's research and preparation of a disquisition (thesis, expository paper, or dissertation). The student in consultation with the major advisor, and the Graduate Committee, will appoint a supervisory committee consisting of members of the NDSU Graduate Faculty and other qualified experts in the field. The supervisory committee must include at least one Graduate Faculty member (not counting the major advisor) from the department, an NDSU Graduate Faculty member from outside the department who may be appointed by the Graduate School, and at least one other faculty member (NDSU or otherwise) in the cognizant field.

For students pursuing an MS double-major, the supervisory committee must conform to requirements of the Graduate School and must contain at least one member of the Graduate Faculty from Mathematics.

12.5.3 **Plan of Study**

A plan of study will be prepared by the student and major advisor no later than the semester immediately following the appointment of the supervisory committee. The plan of study must be approved by the student's supervisory committee, the chair of the graduate committee, the Department Chair, the Dean of the College of Science and Mathematics, and the Dean of the Graduate School. In preparing the plan of study the student should include courses which they plan to take in the future. The date in the plan of study for these courses should read "pending" if not known. The chair of the Graduate Committee, the Chair, and the supervisory committee must be promptly informed of any changes in the student's program.

12.5.4 **Graduate Writing**

Graduate students must be able to communicate effectively. An important aspect of effective communication is clear and grammatically correct writing. To help graduate students achieve this goal the following are required of faculty and students. A portion of grades for assignments in courses should focus on the written exposition. Instructors should provide feedback to the students concerning the writing in the graded assignments. In reading disquisitions all supervisory committee members shall ensure that the exposition is clear and grammatically correct. Advisors shall encourage students to take advantage of writing resources available to graduate students, including the Center for Writers and meetings with the Disquisitions Editor.

12.5.5 **Preliminary Examinations**

The written preliminary examinations are offered two times per year – in January and August. Examinations are given in Algebra, Analysis, Applied Mathematics, Combinatorics, and Geometry/Topology. Scores on the exams are given as Fail, Master's Pass, and Ph.D. Pass. Copies of previous examinations and exam syllabi are made available on the Mathematics Graduate Program website.

Written preliminary examinations will be coordinated by the Graduate Committee. Writing and grading each examination will be the responsibility of the most recent instructor of a related foundational course and the current instructor of a related foundational course. The Graduate Committee may alter these responsibilities as necessary.

The following preliminary exams are offered. The student must pass four written examinations – at most three from Group 1.

Group 1: MATH 720, MATH 750, MATH 760, MATH 746, MATH 736.

Group 2: Either MATH 721 or MATH 726 (but not both), either MATH 754 or MATH 756 (but not both), MATH 784, MATH 747, MATH 737.

The exams are based on one-semester course material that is covered in the courses listed, and on material from undergraduate prerequisites. Each exam will be 2 hours long.

The Ph.D. oral examination is administered by the student's supervisory committee after completion of the written preliminary examinations. The oral examination shall include the following items:
- student description of appropriate background material and plans for the dissertation research, and
- questions from the committee about background material (possibly to include questions about graduate courses, up to four courses total) and research plans.

The format for the oral examination and the supervisory committee's expectations for the examination shall be agreed upon by the supervisory committee and the student before the examination, primarily decided by the student and the major advisor. For instance, this shall include the following.
- Expectations of background material to be presented (e.g., which coursework, textbooks, monographs, or research papers), level of detail of research plan, length of presentation (e.g., 20 minutes), format of presentation (e.g., board or beamer), etc. shall be agreed upon explicitly.
- Relevant materials (textbooks, monographs, research papers, etc.) from the preceding item will be made available to the committee and the student well in advance of the examination.
- The supervisory committee may or may not require the student to provide a written outline of the research plan before the examination. If such an outline is required, the supervisory committee will specify the format of the outline and will specify a deadline for submitting the outline that provides appropriate time for preparation of the outline and appropriate time for the supervisory committee to read it before the examination.
- The supervisory committee is not expected to provide their questions to the student before the examination. However, the supervisory committee is required to limit its questions to the agreed upon material. Of course, certain coursework material is naturally required as a prerequisite for any significant research. Accordingly, some questions about course material may be asked, even if the examination does not include specific courses. However, in such a situation, the questions must be appropriate and relevant to the agreed upon material, and they shall not be the primary focus of the examination.
- If the committee chooses to ask questions about courses, the courses must be agreed upon explicitly before the examination. The examination courses should not include courses from the student's written preliminary examinations; exceptions may be granted by the chair of the Graduate Committee, in exceptional cases.

- The examination should last approximately two hours, with reasonable variation for individual situations. It is the major advisor's responsibility to ensure that the actual length of the examination is appropriate. Preparation for this in advance is crucial.
  - o For instance, if the examination will include questions about courses, then the background and research presentation needs to be reasonably short, and the committee members must be given specific timeframes for their questions.
  - o On the other hand, if the examination will not include questions about courses, then the presentation and/or question sessions shall be appropriately longer.
  - o The presentation portion of the exam should last no longer than one hour, to allow at least one hour for questions.

12.5.6 Disquisitions

Writing a disquisition is considered the capstone experience of a student's graduate career. At the Master's level the disquisition is either a thesis or an expository paper. A Master's thesis emphasizes original research and the ability to analyze mathematical data. An expository paper emphasizes a broad understanding of a general area of mathematics. A disquisition for an MS double-major must contain significant mathematics content. At the Ph.D. level the disquisition is called a dissertation. A dissertation must show originality and demonstrate the student's capacity for independent research; it must embody results of research which constitute a contribution to mathematical knowledge.

Disquisitions reflect not only on the student but also on the Graduate Program. As such they should be mathematically correct, utilize proper grammar and syntax, and adhere to the style format accepted by the Graduate School. The approved style for disquisitions is described in the booklet Guidelines for the Preparation of Disquisitions available from the Graduate School. Students are strongly encouraged to use LaTeX for preparation of their disquisition.

Any student wishing to write a disquisition under the direction of someone who is not a regular faculty member of the Mathematics Department must first obtain written approval from the chair of the Graduate Committee and the Graduate School. The student must have passed the written preliminary examination requirements as well as the language requirements before requesting approval. To support the request for approval, the student must provide to the chair of the Graduate Committee a written statement describing the proposed disquisition areas and the reasons for: (i) working with someone from outside the department and (ii) not working with someone in the department. The proposed disquisition advisor must also provide a current curriculum vitae. In the event that approval is given, at least three members of the supervisory committee must be from the Department of Mathematics.

12.5.7 Defense of the Disquisition

A graduate student must defend their disquisition in an examination open to the public. This examination should open with a presentation by the student of the mathematical content of the disquisition. When the public portion of the defense is completed the supervisory committee may further question the student with regards to the disquisition. The defense of a disquisition is not the forum for questions relating to coursework.

12.5.8 Colloquia

The Mathematics Department regards colloquium lectures to be an integral part of graduate education, and graduate students are expected to attend these lectures.

12.6 Teaching Assistants

Most of the graduate students in the department are supported during the academic year through Graduate Teaching Assistantships or Graduate Teaching Fellowships. Often there is some money available for graduate students to teach in the summer to supplement their income. Descriptions of the various types of support follow. See also Section 9.3.

12.6.1 **Teaching Assistantships:**
A teaching assistantship is a 9-month appointment available to graduate students. Graduate assistants are given teaching duties consonant with their experience. A stipend, as well as a tuition waiver, is provided to compensate the student for their work. The typical duties of a teaching assistant may include: tutoring in the Math Tutor Room, grading for courses in the department, leading recitation sections of calculus, and teaching courses in the department.

While the individual teaching duties will vary it is expected that a teaching assistant will spend no more than 18 hours a week on their teaching duties. If teaching duties exceed 18 hours per week the teaching assistant should meet with the Associate Chair to resolve this problem.

Teaching assistantships are renewable provided that progress in the graduate program and that a progression toward quality teaching is ongoing.

12.6.2 **Teaching Fellowships:**
Teaching fellowships are 9-month appointment available to graduate students. Teaching fellows are given increased teaching duties and a larger stipend. Teaching fellows are generally more advanced graduate students with significant teaching experience. As with a teaching assistantship, teaching fellows must demonstrate progress in the graduate program and continue an ongoing progression toward quality teaching.

While the individual teaching duties will vary it is expected that a teaching fellow will spend no more than 20 hours a week on their teaching duties. If teaching duties exceed 20 hours per week the teaching fellow should meet with the Associate Chair to resolve this problem.

To be eligible for a teaching fellowship a graduate student must have completed their written preliminary examinations and taught at least one course in which they were the primary instructor. Teaching assistants may apply to be teaching fellows when they have satisfied the eligibility requirements. However this designation is not guaranteed. Applications should be submitted to the chair of the Graduate Committee. Selection of an applicant as a teaching fellow is based on: letters of support, excellence in teaching, excellence as a graduate student, and the needs of the department. Selection is done by the Mathematics Department Graduate Committee based on the needs of the department. The designation of teaching fellows may be removed from a graduate student if the performance as a graduate teaching fellow is not satisfactory.

12.6.3 **Summer Teaching**
Summer teaching duties are often available for graduate students. These duties will often be in courses that are normally taught only by faculty in the regular semester. Summer teaching is seen as a way to expand a graduate student's experience in the classroom. Summer teaching assignments are based on the needs of the department and the needs of the graduate students involved. See Section 9.4.

12.7 Policies on Graduate Student Teaching

12.7.1 **Spring/Fall Enrollment**
Teaching assistants are expected to be enrolled at a full time level in the semester for which they are teaching. For students who have not passed their written preliminary examinations it is expected that teaching assistants will enroll in three graduate courses (two of which must be 3-credit courses) each semester. Exceptions to this three-course rule can be granted by the Chair.

12.7.2 **Supervision**
Whether teaching a course on their own, or leading a recitation it is expected that graduate students will be supervised in their teaching. Graduate students who are teaching are expected to provide a copy of their syllabus to their supervisor at least three days before classes begin. Teaching assistants and fellows should also provide copies of their examinations to their supervisor at least one week

before the examination is scheduled. Prior to submitting final grades graduate students should discuss them with the supervisor. Any irreconcilable conflicts between graduate students and supervisors should be referred to the Chair of the Department.

12.8 General Policies

12.8.1 **Academic Honesty**
Each graduate student in the Mathematics Department is expected to conform to the highest standards of academic honesty in all classwork, homework, examinations, research, and writing. They must also conform to the highest standards of professional behavior in teaching. Any violation of this policy will result in penalties such as lowered grades, loss of financial support, and/or dismissal from the graduate program. A letter to the Department describing the violation and the penalty assigned must document each punitive action taken. A copy of the letter must be sent to the affected student. Each punitive action may be appealed through the following channels, in order: the Graduate Committee, the Department Chair, the Dean of the College of Science and Mathematics, and the Dean of the Graduate School. See NDSU Policies 326 and 335.

Chapter 13
Departmental Space

13.1 Office Reassignment

When an office in the Department of Mathematics becomes available, the Chair of the Department will announce the vacancy and solicit requests for reassignment to the vacant office. Any tenured or tenure-track faculty member from the Mathematics Department may request reassignment to the vacated office. The Chair of the Department shall allow at least 48 hours for requests to be made.

If more than one faculty member requests the office it will be awarded to the person with highest seniority, as specified in Section 17.6. If no faculty member desires the office, the Chair of the Department may fill the office at his or her discretion.

Assignment of offices to emeriti professors, lecturers, and teaching assistants will be done by the Chair of the Department at his or her discretion.

13.2 Seminar Room Scheduling and Use

The purpose of the seminar room is to provide a convenient place for meetings, seminars (including Math 790 courses), discussion, and impromptu activities. It is not to be used for regularly scheduled classes. Reserving the seminar room is done by signing up on the calendar on the door of the room.

13.3 Department Lounge

The Department Lounge is not to be used for tutoring, giving examinations, as an office, or for conducting meetings.

13.4 Hallways and Common Areas

All members of the Department should be cognizant of noise and will minimize distractions to others in the Department. Since the Department is a public area members of the Department moderate their language and behavior as appropriate.

13.5 Department Bulletin Boards

Any departmental bulletin board is limited to posts concerning mathematics. Such items are limited to announcements of mathematics courses; announcements of mathematics conferences; mathematics research opportunities for students and/or faculty; and advertisements for activities organized and sponsored by the department. Each item must be approved by the Chair of the department. Post are limited to one month of posting, but can be resubmitted monthly as needed.

Chapter 14
Course Supervision

14.1 Supervision

Every course taught with number less than 165 will have a tenured or tenure-track faculty supervisor assigned to it. The supervisor will help instructors in preparing syllabi, exams, and other class work. In addition. syllabi, examinations, and course grades are to be approved by the course supervisor. The supervisor should report any problems to the Chair of the Department.

14.2 Assignment of Workloads

Course supervisors should be cognizant of the time demands and academic freedoms of the instructors. Except on final exams, course supervisors may not require instructors to give common exams. In writing common examinations the input from all instructors should be considered. In assigning grading for common examinations the course supervisor should assign grading equitably.

14.3 Collegiality

Supervisors and instructors will work to communicate in a collegial manner.

Chapter 15
Miscellaneous Policies

15.1 Mentors

Each new faculty member will be assigned a tenured or tenure-track faculty member as a mentor. The mentor should share broad research interests with the new faculty member; however, the role of a mentor is primarily in the teaching arena. The responsibilities of the mentor include discussion of teaching techniques, strategies, and philosophies with the person being mentored. The mentor shall also visit courses being taught by the person being mentored and provide feedback as needed. For a new faculty member, the mentor will continue in their duties for at least two years from the commencement of mentoring.

15.2 Lecturer Evaluations

Each lecturer will be evaluated annually by the Chair of the Department. This evaluation will include a review of the lecturers teaching and other contributions to the Department. For renewal of a lecturer contract a positive annual evaluation is required.

15.3 Use of Indirect Dollars

Indirect dollars generated by grants will be divided equally between the Department and the Principal Investigator(s). The money received by the Department will be used by the Chair of the Department for the general benefit of the Department.

15.4 Curriculum Changes

Any course or curriculum changes must be reviewed by the Department prior to submission to the College Curriculum Committee.

15.5 Departmental Awards

15.5.1 Graduate Student Teaching Award
The Department of Mathematics Graduate Student Teaching award is awarded to a graduate student who has shown evidence of high-quality teaching. Any faculty member may nominate one graduate student per year for this award. A nomination shall include a letter of support from the faculty member, a teaching statement written by the nominee (no more than two double-spaced pages), and a description of the nominee's teaching experience. Supplemental material showing evidence of quality instruction may also be included (such as SCES's, student comments, etc.).

Approximately two weeks after the nomination deadline the Graduate Committee will narrow the field to (at most) three finalists based on the nomination materials. Each of these three candidates may then be visited in the following two weeks in the classroom by members of the Graduate Committee. After this the Graduate Committee will either select a winner or decline to give the award (in the case that no candidate merits the award).

Nominations will be due on the first Friday of March.

15.5.2 Graduate Student Research Award
The Department of Mathematics Graduate Student Research award is awarded to a graduate student who has shown evidence of high-quality research. Any faculty member may nominate one graduate

student per year for this award. A nomination shall include a letter of support from the faculty member that provides perspective on the quality of the student's research, a description of their research from the candidate (no more than two double-spaced pages), and a list of any talks given or papers submitted/published.

Approximately two weeks after the nomination deadline the Graduate Committee will narrow the field to (at most) three finalists based on the nomination materials. Each of these three candidates may then be asked to provide copies of preprints/reprints. In addition, the name of a mathematician outside of NDSU who can comment on the quality of the research may be solicited from the faculty nominator. The Graduate Committee may contact the outside person(s) for help in selecting a winner. After completing their review (within one month of the nomination deadline) the Graduate Committee will either select a winner or decline to give the award (in the case that no candidate merits the award).

Nominations will be due on the first Friday in March.

15.6 Seniority

For decisions in the department which are based on seniority, seniority is assigned as follows:
1. Rank of the faculty member (e.g. Full Professor > Associate Professor > Assistant Professor).
2. Length of service by the faculty member at their current rank.
3. Length of service by the faculty member in a tenured or tenure-track position in the Department of Mathematics.
4. Length of service by the faculty member in the Department of Mathematics.
5. A random process chosen by the Chair of the Department.

Appendix A
Sample Peer Review Instrument

Instructor: Course:
Date: Time: Place: Attendance:
Observation Length:
Reviewer:
List the objectives of the observed class as discussed in a pre-observation conference.

1. Using the information gathered at the pre-observation conference, discuss the potential relevance of the observed class as it relates to the goals of the class/course.

2. How did the instructor create a climate which was conducive to learning in the observed class meeting?

3. Identify presentational strengths and weaknesses of the instructor during the observed class as they relate to the objectives discussed in the pre-observation conference.

4. Describe teaching strategies observed during the class.

5. Comment about student interaction with the instructor during observation.