

# ATMOSPHERIC SCIENCE GRADUATE GROUP PhD AND MS DEGREE REQUIREMENTS

Previously Approved: May 20, 2004

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Graduate Council Approval: April 8, 2016

## MASTER'S DEGREE REQUIREMENTS

1) **Admissions Requirements:** Consideration for program admission requires a bachelor's degree with a minimum grade point average (GPA) of 3.0, three letters of recommendation, official transcripts, Graduate Record Exam (general test; subject matter test is not required), and Office of Graduate Studies online application and fee by the stated admission deadline. English proficiency exam is required for international applicants who have not studied at an English speaking institution (TOEFL or other University approved exam, if applicable); the minimum score is set by the Office of Graduate Studies. Admissions decisions are made on a case-by-case basis. The decision to recommend admission to the Dean of Graduate Studies is made by the Atmospheric Science Graduate Group (ASGG) Admissions Committee, in consultation with the ASGG faculty, based on available space and competitiveness of applicants compared to the eligible pool.

a) **Prerequisites:**

In addition to the admission requirements stated above, applicants are expected to have passed the equivalent of the following UC Davis courses:

**Preparatory Subject Matter:**

MATH 21D	Vector Analysis	4 units
ATM 60	Introduction to Atmospheric Science	4 units

**Breadth Courses:** "B" grade average or better in the required breadth courses and in one elective breadth course, for a total of 15-16 units.

Required Breadth Courses:

ATM 120	Atmospheric Thermodynamics and Cloud Physics	4 units
ATM 121A	Atmospheric Dynamics	4 units
ATM 128	Radiation and Satellite Meteorology	4 units

Elective Breadth Courses (pick one):

ATM 121B	Atmospheric Dynamics	4 units
ATM 124	Meteorological Instruments and Observations	3 units
ATM 133	Biometeorology	4 units
ATM 158	Boundary-Layer Meteorology	4 units
ATM 160	Introduction to Atmospheric Chemistry	4 units

b) **Deficiencies:**

Deficiencies in the required Breadth Courses can be made up during the first academic year. A "B" grade average or better is required for the Breadth Courses.

2) **M.S. Plan I and Plan II**

**Plan I (Thesis Plan).** This plan requires 30 units of graduate and upper division courses (100 and 200 series only), 2 units of seminars, and, in addition, a master's thesis. Among the 30

units of coursework, at least 12 units must be graduate courses in the major field. Research units (299 or equivalent) and seminar units (290 or equivalent) do not count towards the required 30 units.

**Plan II (Exam Plan).** This plan requires 36 units of graduate and upper division courses (100 and 200 series only) and 2 units of seminars. Among the 36 units of coursework, at least 18 units must be graduate courses in the major field. No more than 6 units of research (299 or equivalent) may be used to satisfy the 18-unit requirement. Seminar units (290 or equivalent) do not count towards the required 36 units. A comprehensive final examination in the major subject is required for each candidate. No thesis is required.

### 3) **Course Requirements –Depth and Seminar**

**Plan I (Thesis Plan):** This plan requires a minimum of 30 units of graduate and upper division courses (100 and 200 series only), of which at least 12 units must be graduate work in the major field. In addition, two units of seminars and a thesis are required. The research thesis serves as the capstone requirement.

**a) Depth Courses (total 30 units):** Breadth Courses that are taken to make up any admission deficiencies may not be used to satisfy the Depth Requirement of 30 units. Research units (299 or equivalent) do not count towards the required 30 units.

- i. 12 units of graded ATM or related graduate courses, including Chemistry, Math, Physics and Engineering, with a “B” grade average or better.
- ii. Additional upper division and/or graduate units to complete the 30-unit Depth Courses requirement, chosen with the advice of the major professor and/or the Graduate Advisor

**b) Seminar (total 2 units):** The 2 units of ATM 290 or equivalent will not contribute to the 30 unit Depth Courses requirement.

**c) Summary:** 30 units of Depth Courses and 2 units of participatory seminars are required for a total of 32 units for every MS Thesis Plan student. Among the 30 units of coursework, 12 units must be graded ATM or related graduate courses; the remaining 18 units can be upper division and/or graduate courses. Equivalent Breadth Courses that are taken to make up any admission deficiencies may not contribute to the required 30 units of coursework. Full-time students must enroll for 12 units per quarter including research, academic, and seminar units. Courses that fulfill any of the program course requirements may not be taken S/U unless the course is normally graded S/U. Once the course requirements are completed, students can take additional classes as needed, although at this point the 12 units per quarter are generally fulfilled with research units (ATM 299) and perhaps seminars. Per UC regulations, students cannot enroll in more than 12 units of graduate level courses (200) or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter.

**Plan II (Exam Plan):** This plan requires a minimum of 36 units of graduate and upper division courses (100 and 200 series only) and two units of seminars. Among the 36 units of coursework, at least 18 units must be graduate work in the major field. No more than 6 units of research (299 or equivalent) may be used to satisfy the 36-unit requirement. A comprehensive final examination in the major subject is required for each candidate. No thesis is required. The capstone requirement is fulfilled by a comprehensive examination.

- a) **Depth Courses (total 36 units):** Breadth Courses that are taken to make up any admission deficiencies may not be used to satisfy the Depth Requirement of 36 units.
- i. 18 units of graduate courses in ATM or related areas, including Chemistry, Math, Physics and Engineering, with a “B” grade average or better. No more than 6 units of research (299 or equivalent) may be used to satisfy the 18-unit requirement. Of these 18 units of graduate level courses, a minimum of 6 units must be non-research ATM courses.
  - ii. Additional upper division and/or graduate units to complete the 36-unit Depth Courses requirement, chosen with the advice of the major professor and/or the Graduate Advisor.
- b) **Seminar (total 2 units):** The 2 units of ATM 290 or equivalent will not contribute to the 36 unit Depth Courses requirement.
- c) **Summary:** 36 units of Depth Courses and 2 units of participatory seminars are required for a total of 38 units for every MS Exam Plan student. For the 36 units of coursework, 18 units must be graded ATM or related graduate courses among which a minimum of 6 units must be non-research ATM courses. The remaining 18 units can be upper division and/or graduate courses. Equivalent Breadth Courses that are taken to make up any admission deficiencies may not contribute to the required 36 units of coursework. Full-time students must enroll for 12 units per quarter including research, academic, and seminar units. Courses that fulfill any of the program course requirements may not be taken S/U unless the course is normally graded S/U. Once the course requirements are completed, students can take additional classes as needed, although at this point the 12 units per quarter are generally fulfilled with research units (ATM 299) and perhaps seminars. Per UC regulations, students cannot enroll in more than 12 units of graduate level courses (200) or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter.

4) **Special Requirements:**

**One formal presentation, normally given in ATM 290, is required for both MS Plan I and MS Plan II.**

5) **Committees:**

a) **Admission Committee:**

Applications will be submitted to the Admissions Committee. The Admissions Committee consists of a minimum of 3 members of the graduate group, appointed by the Executive Committee per ASGG by-laws. Based on a review of the entire application, the Admissions Committee, in consultation with the ASGG faculty, recommends to accept or decline an applicant’s request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval. Notification of admissions decisions will be sent by Graduate Studies.

b) **Course Guidance:**

The Graduate Adviser and the Major Professor assist the student in developing the study plan. The plan will be completed within the first year of admission to the program.

c) **Thesis Committee (for Plan I):**

The student, in consultation with his/her major professor and graduate advisor, nominates 3 faculty members to serve on the Thesis Committee. The nominations are submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy. The major professor serves as Chair of the committee.

**6) Advising Structure and Mentoring:**

**Major Professor** is the faculty member who supervises the student's research and thesis; the major professor serves as the Chair of the Thesis Committee.

**Graduate Advisor**, who is a faculty member appointed by Graduate Studies, is a resource for information on academic requirements, policies and procedures, and registration.

**Graduate Program Staff** assists students with identifying a major professor, identifying appointments, and general university policies.

**Mentoring Guidelines** can be found in the graduate student handbook (<http://atm.ucdavis.edu/student-resources/internal-resources/>).

**7) Advancement to Candidacy:**

Every student must file an official application for Candidacy for the Degree of Master of Science after completing one-half of their course requirements and at least one quarter before completing all degree requirements; this is typically the 5<sup>th</sup> quarter. The MS Candidacy form can be found online at: <http://www.gradstudies.ucdavis.edu/forms/>. A completed form includes a list of courses the student will take to complete degree requirements. If changes must be made to the student's course plan after s/he has advanced to candidacy, the Graduate Advisor must recommend these changes to Graduate Studies. Students must have their Graduate Advisor and committee Chair sign the candidacy form before it can be submitted to Graduate Studies. If the candidacy is approved, the Office of Graduate Studies will send a copy to the appropriate graduate staff person and the student; the Thesis Committee Chair will also receive a copy, if applicable. If the Office of Graduate Studies determines that a student is not eligible for advancement, the department and the student will be told the reasons for the application's deferral. Some reasons for deferring an application include: grade point average below 3.0, outstanding "I" grades in required courses, or insufficient units.

**8) Thesis and Comprehensive Examination Requirements:**

**a) Thesis Requirements (Plan I):**

- i. Satisfactory completion of a Master's Thesis. A Master's thesis is an educational experience for the student, which is usually closely guided by the major professor. The thesis should demonstrate the student's ability to pose a sound scientific hypothesis, test the hypothesis using scientific methods, and reach logical conclusions. The thesis must be written in accordance with the rules issued by Graduate Studies and be acceptable to the 3-member Thesis Committee.
- ii. Exit Seminar. During the final quarter of residency, the student is required to present the results of the thesis work in an exit seminar. This seminar may be given as part of ATM 290 or an independent one.

**b) Comprehensive Examination (Plan II):**

- i. Plan II requires satisfactory completion of a written examination (no more than 8 hours to complete). The MS exam committee, which is appointed by the graduate advisor, establishes the contents of the exam. All students are required to answer one question from each of the required three breadth subjects—thermodynamics/cloud microphysics, geophysical fluid dynamics, and radiation and satellite meteorology—and two questions to be selected by the student from a group of more advanced (200 course level) subjects in atmospheric science. Such advanced course subjects may include but are not limited to boundary layer meteorology, biometeorology, atmospheric chemistry, climate dynamics, and numerical modeling.
- ii. To pass the MS exam, a student must demonstrate strong proficiency in at least 4 of the 5 subjects and cannot show any major deficiencies in the fifth subject. The committee, having reached a unanimous decision, shall inform the student of its decision to:
  - “Pass” (no conditions may be appended to this decision);
  - “Not Pass” (the Chair’s report should specify whether the student is required to retake all or part of the examination, list any additional requirements, and state the exact timeline for completion of requirements to achieve a “Pass”); or
  - “Fail”.
- iii. A student who fails the MS Exam the first time may retake the exam one more time at the next available offering. A student who fails the exam the second time will be subject to termination from the MS degree program.
- iv. Depending on student needs, the MS exam will normally be offered near the end of spring quarter. Students can petition to take the exam at a different time.
- v. The combination of the doctoral Preliminary Exam and Qualifying Exam is considered equivalent to the MS Exam, for doctoral students. Doctoral students who have passed both the Preliminary and Qualifying exams may petition for an MS degree so long as they meet other campus and ASGG eligibility criteria.

**9) Normative Time to Degree:**

Normative time to degree is 6 quarters with 3 quarters being Normative Time to Advancement to Candidacy and 3 quarters being Normative Time in Candidacy.

**10) Typical Time Line and Sequence of Events:**

Example 1: MS students with Breadth Course deficiencies at the time of admission

Year One	Fall	Winter	Spring
	ATM 120	ATM 121A	ATM 121B or 158 (if not 160, 133, or 124)
	ATM 124 (if not 160, 133, 121B or 158)	ATM 128	ATM Upper division/graduate course(s)
	ATM 299	ATM 160 or ATM 133 (if not 121B, 158, or 124)	ATM 290
		ATM 299	ATM 299
Year Two	Fall	Winter	Spring
	Upper division/graduate	Upper division/graduate	Upper division/graduate

	course(s)	course(s)	course(s)
	ATM 290		ATM 290
	ATM 299		ATM 299
<b>Year Three</b>	<b>Fall</b> (advancement to MS candidacy)	<b>Winter</b>	<b>Spring</b> (Thesis/Comprehensive Exam completed)
	Upper division/graduate course(s)	Upper division/graduate course(s)	Upper division/graduate course(s)
	ATM 290		ATM 299
	ATM 299		

**Example 2: MS students without Breadth Course deficiencies at the time of admission**

<b>Year One</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
	Upper division/graduate course(s)	Upper division/graduate course(s)	Upper division/graduate course(s)
	ATM 290	ATM 299	ATM 290
	ATM 299		ATM 299
<b>Year Two</b>	<b>Fall</b> (advancement to MS candidacy)	<b>Winter</b>	<b>Spring</b> (Thesis/Comprehensive Exam completed)
	Upper division/graduate course(s)	Upper division/graduate course(s)	Upper division/graduate course(s)
	ATM 290		ATM 290
	ATM 299		ATM 299

**11) Sources of Funding**

Most students are funded through a combination of fellowships, graduate student researcher and teaching assistant appointments.

**12) PELP, In Absentia and Filing Fee Status:**

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide: <http://www.gradstudies.ucdavis.edu/publications/>

**PHD DEGREE REQUIREMENTS**

- Admissions Requirements:** Consideration for program admission requires a bachelor's degree with a minimum GPA 3.0 grade point average, three letters of recommendation, official transcripts, Graduate Record Exam (general text; subject matter test is not required), and Office of Graduate Studies online application and fee by the stated admission deadline. English proficiency exam (TOEFL or other University approved exam, if applicable) with the minimum score set by the Office of Graduate Studies is required for international applicants who have not studied at an English speaking institution. Admissions decisions are

made on a case-by case basis. The decision to recommend admission to the Dean of Graduate Studies is made by the Atmospheric Science Graduate Group (ASGG) Admissions Committee, in consultation with the ASGG faculty, based on available space and competitiveness of applicants compared to the eligible pool.

**a) Prerequisites:**

In addition to the admission requirements stated above, applicants are expected to have the equivalent of the following UC Davis courses:

**Preparatory Subject Matter:**

MATH 21D	Vector Analysis	4 units
ATM 60	Introduction to Atmospheric Science	4 units

**Breadth Courses:** “B” grade average or better in the required breadth courses and in one elective breadth course, for a total of 15-16 units.

Required Breadth Courses:

ATM 120	Atmospheric Thermodynamics and Cloud Physics	4 units
ATM 121A	Atmospheric Dynamics	4 units
ATM 128	Radiation and Satellite Meteorology	4 units

Elective Breadth Courses (pick one):

ATM 121B	Atmospheric Dynamics	4 units
ATM 124	Meteorological Instruments and Observations	3 units
ATM 133	Biometeorology	4 units
ATM 158	Boundary-Layer Meteorology	4 units
ATM 160	Introduction to Atmospheric Chemistry	4 units

**b) Deficiencies:** Deficiencies in the required Breadth Courses can be made up during the first academic year. A “B” grade average or better is required for the Breadth Courses.

**2) Dissertation Plan:**

**Plan A.** Specifies a 5 member dissertation/final examination committee, a final defense, and an exit seminar.

**3) Course Requirements - Depth and Seminar (total 40 units)**

This plan requires a minimum of 36 units of graduate and upper division courses (100 and 200 series only), of which at least 6 units of graded ATM graduate courses and 9 units of additional graded upper division or graduate courses. In addition, 4 units of seminars and a dissertation are required. The research dissertation serves as the capstone requirement. Research units (299 or equivalent) do not count towards the required 36 units.

**a) Depth Courses (total 36 units):** Breadth Courses that are taken to make up any admission deficiencies may not be used to satisfy the Depth Requirement of 36 units. Research units (299 or equivalent) do not count towards the required 36 units.

- i. 6 units of graded ATM graduate courses with a “B” grade average or better
- ii. 9 units of additional graded upper division or graduate courses
- iii. Additional graduate and upper division units to complete the 36-unit coursework requirement, chosen with the advice of the major professor and/or the Graduate Advisor

- b) **Seminar (total 4 units):** The 4 units of ATM290 or equivalent will not contribute to the 36 unit Depth Courses requirement.
- c) **Summary:** 36 units of Depth Courses and 4 units of participatory seminars are required for a total of 40 units. For the 36 units of Depth Courses, 6 units must be graded ATM graduate courses; 9 units must be graded upper division and/or graduate courses; and the remaining units can be graduate and/or upper division courses. Equivalent Breadth Courses that are taken to make up any admission deficiencies may not contribute to the required 36 units of coursework. Full-time PhD students must enroll for 12 units per quarter including research, academic, and seminar units. Courses that fulfill any of the program course requirements may not be taken S/U unless the course is normally graded S/U. Once the course requirements are completed, students can take additional classes as needed, although at this point the 12 units per quarter are generally fulfilled with research units (ATM 299) and perhaps seminars. Per UC regulations, students cannot enroll in more than 12 units of graduate level courses (200) or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter.

4) **Special Requirements:**

Two formal presentations, normally given as part of ATM 290

5) **Committees:**

a) **Admissions Committee:**

Applications will be submitted to the Admissions Committee. The Admissions Committee consists of a minimum of 3 members of the graduate group, appointed by the Executive Committee per ASGG by-laws. Based on a review of the entire application, the Admissions Committee, in consultation with the ASGG faculty, will recommend to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval. Notification of admissions decisions will be sent to the applicant by Graduate Studies.

b) **The Preliminary Examination Committee:**

The Preliminary Examination (PE) Committee is appointed by the Graduate Advisor in consultation with the Executive Committee. The PE Committee is composed of at least 3 group members, broadly representing the subject areas of the examination.

c) **Course Guidance:**

The Graduate Adviser and the Major Professor together assist the student in developing the study plan. The plan will be completed within the first year of admission to the program.

d) **Qualifying Examination Committee:**

The Qualifying Examination (QE) Committee is recommended by the Graduate Advisor in consultation with the candidate and his/her prospective major professor and submitted to Graduate Studies for approval in accordance with Academic Senate regulations. The QE Committee is composed of 5 members, including at least 3 members from the Atmospheric Science Graduate Group, and at least 1 member from outside of the group. The student's major professor may not be the Chair of this committee but may be a member of the committee.

e) **Dissertation Committee:**

The student, in consultation with his/her major professor and graduate advisor, nominates 5 faculty members to serve on the Dissertation Committee. The dissertation committee must include at least 3 members from the Atmospheric Science Graduate Group, and at least 1 member from outside of the group. The nominations are submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy. The major professor serves as Chair of the committee.

**6) Advising Structure and Mentoring:**

**Major Professor** is the faculty member who supervises the student's research and dissertation; the major professor serves as the Chair of the Dissertation Committee.

**Graduate Advisor**, who is appointed by the Dean of Graduate Studies, is a resource for information on academic requirements, policies and procedures, and registration information until the QE Committee is formed.

**Graduate Program Staff** assists students with identifying a major professor, identifying appointments, and general university policies.

**Mentoring Guidelines** can be found in the graduate student handbook, which can be found at: <http://atm.ucdavis.edu/student-resources/internal-resources/>.

**7) Advancement to Candidacy:**

Before advancing to candidacy for a doctoral degree, a student must have: (1) satisfied all requirements set by the graduate program; (2) maintained a minimum GPA of 3.0 in all course work (except those courses graded S or U); and (3) have passed the PE and the QE. Normally, students advance to candidacy before the end of the 9<sup>th</sup> quarter; students must pass their QE by the end of the 9<sup>th</sup> quarter in order to remain eligible for academic appointments (teaching assistant, graduate student researcher, associate in, etc.). The student must file the appropriate paperwork with the Office of Graduate Studies and pay the candidacy fee in order to be officially advanced to PhD Candidacy. Refer to the Graduate Council website for additional details regarding the Doctoral Qualifying Examination at:

<http://gradstudies.ucdavis.edu/gradcouncil/policiesall.html>.

**8) Preliminary Examination, Qualifying Examination and Dissertation Requirements:**

**a) Preliminary Examination (PE).** Questions are solicited, compiled and evaluated by the PE committee. The written PE will test foundational knowledge needed by all students pursuing a PhD in atmospheric science.

- i. All students are required to answer one question from each of the required three breadth subjects—thermodynamics/cloud microphysics, geophysical fluid dynamics, and radiation and satellite meteorology—and one to be selected from the specialty/advanced subjects, such as boundary layer meteorology, atmospheric chemistry, biometeorology, air quality, instruments and observations, atmospheric modeling, and climate dynamics.
- ii. To pass the PE, a student must demonstrate strong proficiency in at least 3 of the 4 subjects and cannot show any major deficiencies in the fourth subject.
- iii. The committee, having reached a unanimous decision, shall inform the student of its decision to:

- “Pass” (no conditions may be appended to this decision);
  - “Not Pass” (the Chair’s report should specify whether the student is required to retake all or part of the examination, list any additional requirements, and state the exact timeline for completion of requirements to achieve a “Pass”); or
  - “Fail”.
- iv. A student must pass the PE before attempting the QE. A student who fails the PE the first time may retake the PE one more time at the next available offering (an exception to this sequence requires the approval of the Graduate Advisor.) A student who fails the PE the second time will be subject to termination from the PhD degree program. After consultation with the Graduate Advisor and the student’s dissertation advisor, some students may have an option to work instead towards a MS degree. A student who passes the PE and decides to change to the exam plan of the MS degree will need to take 2 more questions from advanced (200 course level) subjects in atmospheric science, as required by the MS exam plan. Other requirements (units, sufficient demonstration of subject proficiency, etc.) of the MS exam plan still apply.
- v. Depending on student needs, the PE will normally be offered twice a year and scheduled near the beginning of fall quarter and the end of spring quarter. In general, students will take their PE in spring after their first year. However, students who enter the graduate program having already taken the core courses (or equivalent) as part of their undergraduate degree may petition to take the PE sooner. All students are expected to finish the PE before their fifth quarter in residence. An exception to this expectation requires the approval of the Graduate Advisor.
- vi. Appeals and non-unanimous decisions of the PE Committee will be reviewed and decided by the Executive Committee.

**b) Qualifying Examination (QE)**

**1. General Information**

The Qualifying Examination is administered by the student’s QE Committee, and should be completed before the end of the student's third academic year, ideally sometime during the student’s second year. The student submits an Application for Qualifying Examination to the Graduate Advisor or program chair at least six weeks prior to the oral examination date. Under no circumstances should a student take the Qualifying Examination before receiving formal notice of Admission to the Qualifying Examination from the Dean of Graduate Studies. As part of this form, the QE Committee is recommended by the Graduate Advisor in consultation with the candidate and his/her prospective major professor and submitted to Graduate Studies for approval in accordance with Academic Senate regulations. The committee is composed of 5 members, including at least 3 members from the Atmospheric Science Graduate Group, and at least 1 member from outside of the group. The student’s major professor may not be the Chair of this committee but may be a member of the committee.

**2. Written Portion of the Exam – Dissertation Prospectus**

The Prospectus is an independently prepared proposal not to exceed 12 single spaced pages including figures, tables and appendices. The font size must be no smaller than Times Roman 11 (or equivalent). The references are not included in the 12 page limit.

The prospectus should include: an introduction to the topic (including a survey of the relevant literature), a hypothesis or set of questions to be addressed, methods to be used to address the hypothesis/questions, any preliminary results, and cited references. The Prospectus must be submitted to the QE Committee at least ten working days prior to the date of the Oral Exam.

### **3. Oral Portion of the Exam**

The oral portion of the QE is administered by the student's QE Committee, and is open to all ASGG faculty with the unanimous consent of the committee and student. The oral portion of the QE will include two parts. The first part is a student presentation of the prospectus, which should be prepared as approximately a 20 – 30 minute talk. The actual presentation will take longer because of questions from the committee. The second part of the exam will be oral questions by the Committee and interested faculty regarding the student's prospectus, general knowledge of atmospheric science, depth area of study, and any follow up questions related to the Preliminary Exam. The total length of the Exam should be approximately three (3) hours.

### **4. Outcome of the Exam:**

The QE Committee shall evaluate the Qualifying Exam based upon the following expectations for the student: (i) a clear, well-written Prospectus that includes background information and the significance of the research area, clearly stated research goals, methods for addressing these goals, and any preliminary results, (ii) a clear presentation that covers these same points, (iii) a mastery of the material related to the prospectus as well as material from Breath and Depth coursework and general atmospheric science, and (iv) the ability to answer questions to the satisfaction of the committee members. Only the appointed members of the QE Committee will be present for the deliberations and evaluation. Successful completion of both portions of the QE, followed by filing the application for "Advancement to Candidacy" with Graduate Studies, promotes the student to a candidate for the Doctor of Philosophy degree. The committee will reach a decision on the student's performance immediately after the oral exam. The committee, having reached a unanimous decision, shall inform the student of its decision to:

- "Pass" (no conditions may be appended to this decision),
- "Not Pass" (the Chair's report should specify whether the student is required to retake all or part of the examination, list any additional requirements, and state the exact timeline for completion of requirements to achieve a "Pass"), or
- "Fail".

If a unanimous decision takes the form of "Not Pass" or "Fail", the Chair of the QE committee must include in its report a specific statement, agreed to by all members of the committee, explaining its decision and must inform the student of its decision. Having received a "Not Pass" the student may attempt the QE one additional time; the QE report must list the specific conditions and timing for the second exam. After a second examination, a vote of "Not Pass" is unacceptable; only "Pass" or "Fail" is recognized. Only one retake of the qualifying examination is allowed. Should the student receive a "Fail" on the first or second attempt at the exam, the student will be recommended for disqualification from the program to the Dean of Graduate Studies. A student who passes the QE and decides to change to the exam plan of the MS

degree can waive the exam part of the MS exam plan. Other requirements (units, sufficient demonstration of subject proficiency, etc.) of the MS exam plan still apply.

*[NOTE: The combination of the doctoral Preliminary Exam and Qualifying Exam is considered equivalent to the MS Exam, for doctoral students. Doctoral students who have passed both the Preliminary and Qualifying exams may petition for an MS degree so long as they meet other campus and ASGG eligibility criteria.]*

**c) Dissertation**

**1. Exit Seminar:**

Satisfactory PhD Dissertation Defense including a public seminar. The defense will be composed of two parts:

- i. an exit seminar open to students, faculty and the public
- ii. an oral examination administered and evaluated by the five members of the Dissertation Committee. The oral examination will focus on the dissertation and the relationship of the candidate’s research to the overall discipline.

**2. Dissertation: General Requirements**

Filing of a PhD dissertation with the Office of Graduate Studies is normally the last requirement satisfied by the candidate. The deadlines for completing this requirement are available online at the website of the Office of the Registrar. A candidate must be a registered student or in Filing Fee status at the time of filing a dissertation, with the exception of the summer period between the end of the Spring Quarter and the beginning of Fall Quarter. The PhD Dissertation will be prepared, submitted and filed according to regulations instituted by the Office of Graduate Studies <http://gradstudies.ucdavis.edu/students/filing.html>. Satisfaction of this requirement must be verified by the Dissertation Committee Chair.

**3. Dissertation**

The PhD dissertation must be an original and substantial contribution to knowledge in the student’s major field. It must demonstrate the ability to carry out a program of advanced research, relying extensively upon one’s own initiative and skills, and must report the results in accordance with standards observed in recognized scientific journals. The dissertation must be written in accordance with the rules issued by Graduate Studies and must be approved by at least three members of the five member Dissertation Committee.

**9) Normative Time to Degree**

Normative time to degree is 15 quarters with 9 quarters being Normative Time to Advancement to Candidacy and 6 quarters being Normative Time in Candidacy.

**10) Typical Time Line and Sequence of Events**

Year One	Fall	Winter	Spring
	ATM 120	ATM 121a	ATM 121b or 158 (if not 160 or 133)
	ATM 290 ATM124 (if not 160, 133, 121b or 158)	ATM 128	ATM Upper division/graduate course(s)
	ATM 299	ATM 299	ATM 290

	Upper division/graduate course(s)	ATM 160 or ATM 133 (if not 121b or 158) Upper division/graduate course	ATM 299 (Preliminary Exam completed)
<b>Year Two</b>	<b>Fall</b>	<b>Winter</b>	<b>Spring</b>
	Upper division/graduate course(s)	Upper division/graduate course(s)	Upper division/graduate course(s)
	ATM 290	Elective	ATM 290
	ATM 299	ATM 299	ATM 299
<b>Year Three</b>	<b>Fall</b> Pass QE (advancement to PhD candidacy- year 3)	<b>Winter</b> Dissertation Research	<b>Spring</b> Dissertation Research (advancement to PhD candidacy)
	ATM 290		ATM 290
	Qualifying Exam Preparation	Qualifying Exam Preparation	Qualifying Exams
<b>Years Four-Five</b>	Dissertation Research and Completion		

**11) Sources of Funding.**

The majority of students are funded through a combination of fellowships, graduate student researcher, and teaching assistant appointments.

**12) PELP, In Absentia and Filing Fee status.**

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide: <http://www.gradstudies.ucdavis.edu/publications/>

**13) Leaving the Program Prior to Completion of the PhD Requirements.**

Should a student leave the program prior to completing the requirements for the PhD, they may still be eligible to receive a MS degree if they have fulfilled all the requirements (see Master's Degree section). Students can use the Change of Degree Objective form available from the Registrar's Office:

<http://registrar.ucdavis.edu/PDFFiles/D065PetitionForChangeOfGraduateMajor.pdf>