

III. ADMISSIONS AND PROGRAM PROCEDURES

Admission to Graduate Study

Any person who holds a bachelor's degree, a master's degree, or their equivalents, from a college of good standing and who wishes to enroll as a graduate student at UMR must submit an application for admission to the director of admissions. Forms for this purpose can be obtained from that office. Applications are also available on the World Wide Web at:

<http://www.umr.edu/admissions>

Each application must be followed by an official transcript of both graduate and undergraduate records from each college or university attended. A statement of rank in the undergraduate graduating class also should be included. The Educational Testing Service Graduate Record Examination (GRE) is required by all departments before admission to UMR. Admission as a graduate student pursuing a degree must be approved by the chair of the appropriate department and school/college dean.

All new applicants are required to pay an admissions application fee of \$25 for United States citizens; \$50-international students. This application fee is non-refundable. This fee must be paid in U.S. currency only.

Admission is normally given to those students who ranked in the upper third of their baccalaureate graduating class or who have done quality work at the graduate level. For this requirement, a B average in the last two years of undergraduate effort is considered equivalent to an upper one-third standing. If the student's undergraduate curriculum lacks some of the equivalent courses in the undergraduate curriculum at UMR, the student may be required to complete the deficiencies, for nongraduate credit, as determined by the major department chair.

Any person not eligible for admission as a regular graduate student may be considered for admission as a conditional graduate student. Any conditional graduate student who subsequently desires to become a candidate for a degree may change his/her status to regular graduate status upon the recommendation of the department chair in the proposed major field of study and approval of the school/college dean (approval of From I). However, such consideration is not permitted until the student has completed a minimum of 12 semester hours of graduate course work with a cumulative grade point average of 3.00 or higher.

Only that portion of the work completed as a **conditional graduate student** which is approved by the student's advisor, department chair, and school/college dean may be applied toward a graduate degree, but all work completed as a **conditional graduate student** as well as GRE scores will be considered relative to change of status to degree candidacy. No more than one semester beyond the semester of completion of the first 12 hours taken as a conditional student may be allowed in the conditional status. All graduate course work (excluding research and

special problems) taken will be included in figuring the cumulative grade point average. Conditional students are not allowed to enroll for 490 credit until the semester in which the "minimum of 12 semester hours of graduate course work" which forms the proposed schedule will be completed.

Regular and **conditional** student status, as described above, is normally limited to the upper one-third (or minimum 3.0 GPA* the last two years as equivalent) and one-half (or minimum 2.75 GPA* for the last two years as equivalent) of graduating class students, respectively. In practice, other students with special needs may take course work exclusive of 400-level courses as **postbaccalaureate**** students with the approval of the applicable department chair and school/college dean. Postbaccalaureate students may enroll in graduate (exclusive of 400-level) courses, but the work will not be transferred to the graduate program if the student is admitted to graduate study after the summer semester of 1994, unless the student is in an approved certificate program.

Students who have undergraduate courses to be taken due to a different undergraduate discipline, or for any other reason, but who otherwise meet graduate admission requirements, are encouraged to apply for graduate admission by the first semester that they plan on taking one or more graduate courses, and may be permitted to enroll for these graduate courses.

Any person not desiring a graduate degree may be considered for admission as a non-degree graduate student. Applicants for non-degree admission need only request official transcripts from the institution at which the baccalaureate degree was awarded.

* GPA requirements may be set higher than those stated above.
** Postbaccalaureate students are administered outside of graduate study, and the director of admissions should be consulted for admissions in this category.

Dual Enrollment

Admission for dual enrollment as an undergraduate and graduate student during the second semester of the student's senior year is granted by the director of admissions with the approval of the department chair and school/college dean. Admission is normally given to those students who rank in the upper third of their undergraduate class. As an alternative to class rank, students who have a 3.00 or above cumulative GPA for the previous three semesters and a 3.00 mid-semester GPA in the semester prior to registering shall be permitted to dually enroll. Honors program students may be dually enrolled for two semesters of their senior year. A student who desires to dually enroll must submit an application to the director of admissions. Forms for this purpose can be obtained from that office. Students must declare which courses are to be taken for graduate credit within the first two weeks of each semester. A student must take at least three hours for undergraduate credit from UMR in a given semester.

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Dual enrollment is limited to 16 credit hours per semester. Petitions for excess hours are considered by the school/college dean. If a dually enrolled student fails to meet undergraduate requirements, the probationary status will be that of an undergraduate student and will be judged without reference to graduate grades.

Graduate Certificate Program

The Certificate Program is designed to appeal to working professionals. Certificate programs will be identified each year along with four-course sequence from existing graduate courses that provide working professionals with the knowledge they need to understand and contribute to an emerging area. Once admitted to the individual certificate programs, the student must take four designated courses. In order to receive a Graduate Certificate, a student must have an average cumulative grade point average of 3.0 or better. Students admitted to the Certificate Program will have non-matriculated status; however, if they complete the four-course sequence with a grade of B or better in each of the courses taken, they will be admitted to the M.S. program if they so choose. The Certificate credits taken by students admitted to the M.S. program will count towards their master's degrees. Students who do not have all of the prerequisite courses necessary to take the course in the Certificate Program will be allowed to take "bridge" courses at either the graduate or undergraduate level to prepare for the formal Certificate courses.

Once admitted to a certificate program, a student will be given three years to complete the program so long as he/she maintains a B average in the courses taken.

Application Dates

Applications should be submitted by the following dates; for the fall semester, July 15; for the winter semester, December 15; for the summer session, May 1.

International Student Admission

All students from outside the United States who wish to enter UMR are required to:

1. Submit an application for admission.
2. Submit at the earliest possible date official transcripts from all schools attended. GRE scores are required. The applicant is notified when evaluation is completed.
3. Except those for whom English is their native language and whose schooling has been in English, demonstrate by one of the following procedures a sufficient command of English to pursue work at the University of Missouri-Rolla:

- a. Take the Test of English as a Foreign Language (TOEFL). Minimum acceptable is 550. Each student is responsible for obtaining all information concerning the test from:

Test of English as a Foreign Language
Educational Testing Service
Box 899 Princeton, NJ 08540 USA

The TOEFL Bulletin of Information and registration form also may be obtained in a number of cities outside the United States. They often are available at one of the following: American embassies and consulates, Offices of the United States Information Service (USIS), United States educational commissions and foundations abroad, and binational centers. Students residing in Taiwan must apply to: Language Center, 2-1 Hsueh Road, Taipei, Taiwan, for the special Taiwan editions of TOEFL publications.

- b. Attend and satisfactorily complete an English Language Institute*; or,
 - c. Demonstrate English proficiency by attending and satisfactorily completing one year at another accredited American college or university.**
4. A student transferring from another American college or university is eligible to transfer if: he/she has been enrolled full-time at the school he/she was last authorized to attend during the term immediately preceding the transfer or last preceding vacation period; he/she plans to be a full-time student at UMR and is financially able to attend UMR. An international student is encouraged to seek transfer for the fall semester, if possible, so that the International Student Questionnaire can be completed during the summer months after he/she has finished at the previous school.
 5. Application deadline dates for International Students:
 - a. Overseas applicants or those already in the U.S. transferring to UMR in a different degree level or into a different degree program – No acceptance letter or I-20 will be issued to an international applicant whose application is not approved by the following dates:
 - 1) Fall semester—June 15
 - 2) Winter semester –November 15
 - 3) Summer session –April 1Students whose credentials are not complete and are still being processed by the above dates will necessarily be delayed one semester.
 - b. Stateside applicants transferring to UMR at the same degree level and the same degree program (straight transfer) – Applications, transcripts, and UMR's international student questionnaire must be fully completed by the following dates to enable the student to transfer:
 - 1) Fall semester—July 15
 - 2) Winter semester—December 15
 - 3) Summer session –May 1

* Students who enroll in the University's Intensive English Program must complete that program to the satisfaction of its director and academic coordinator (i.e. satisfy all graduation requirements) before being allowed to enroll full-time in academic course work. A student may enroll in a reduced academic load with the approval of both his/her academic department and the Intensive English Program. Students enrolled in the Intensive English Program must complete that program within one calendar year.

** If the TOEFL score is lower than required, some departments then allow option (b). Option (c) is no longer available.

Students whose credentials are not complete and are still being processed by the above dates will be necessarily delayed one semester.

6. Pay all expenses while in school here. UMR has no financial aid which can be made available.
7. Have a health history and immunization record on file at UMR Health Services.
8. For application, write to:
 Director of Admissions
 102 Parker Hall
 Rolla, MO 65409-1060 USA

Graduate Student Registration

(Policy Memorandum No. II-20)

- A. Candidates for a doctoral degree
 1. All doctoral students are required to enroll for research. The total amount may vary, but the student must register and complete a minimum of 24 hours (490).
 2. The full-time load for graduate students is 9 hours for a semester and 4 hours for a summer session.
 3. After completing the residency requirement and passing the comprehensive examination for the doctorate degree, the student must remain enrolled until the degree is completed or the candidacy is cancelled. A student actively engaged in work towards the degree must be enrolled for credit commensurate with this activity, but in no case less than three hours each semester or summer.
 4. When all requirements except the dissertation have been completed and the candidate is away from the campus (beyond commuting range), he or she must enroll for at least one hour of credit each registration period until the degree is completed. Failure to do so may invalidate the candidacy. Registration and billing for off-campus students will be automatic after passing the comprehensive, once application for continuous registration is made and approved on the appropriate form available at <http://www.eng.umar.edu/Info/gradforms.html>. Appropriate billing procedures have been established to maintain such continuous registration.
 5. Interruption of continuous registration due to failure to comply (e.g., non-payment) will result in the need for readmission under requirements then in effect.
- B. Candidates for masters' degrees

All master's degree candidates on campus, utilizing faculty and/or facilities (including library and computers) for the purpose of advisement, data gathering, courses, or examinations shall be enrolled for credit commensurate with this activity. But in no case shall they be enrolled for less than three hours each semester or summer.

- C. Examination only fee

An examination fee is an appropriate substitute for the three-hour requirement only under either of the following conditions:

 1. An on-campus student who submits a thesis/dissertation to the appropriate dean's office before the end of the semester may enroll for the final exam during the intersession.
 2. An off-campus M.S. student (beyond commuting range) who has in a previous session completed all other requirements for the degree returns at any time during the semester to defend the thesis or take the M.S. Comprehensive Exam.*
- D. Other considerations
 1. All graduate teaching and research assistants including graduate assistants, graduate instructors, and teaching fellows are required to be enrolled for at least nine hours each semester and three hours during the summer.
 2. Graduate students living beyond commuting distance of the campus will enroll for credits consistent with their use of campus resources as determined by their department and their own needs for credit. Off-campus research for credit must be approved, however, in advance by the department and the appropriate dean's office. A form exists for that purpose.
 3. Students enrolled in oral examination only during an intersession and failing to complete before the next semester begins must register for at least one hour of research (490) through the end of the fourth week of the semester or second week of the summer session. All non-resident students on appointment during the previous semester may enroll at the in-state educational fee rate. If the graduate form II/VIII and the library copy of the thesis/dissertation are not submitted by that time, enrollment will increase to three credit hours for the semester or summer session.

* School of Mines and Metallurgy and School of Engineering no longer require M.S. Comprehensive Exam.

Permissible Schedules

A graduate student on a full-time academic program is limited to a maximum of 16 credit hours of work during any regular semester and to nine credit hours in a summer term (eight-week session).

Graduate instructors, teaching fellows, and graduate teaching and research assistants must not exceed the following permissible schedules:

	Credit Hours	
	Regular Semester	Summer Session
Appointment		
0.250 FTE Graduate Asst	14	7
0.375 FTE Graduate Asst	13	6
0.500 FTE Graduate Asst	12	6
0.625 FTE Graduate Asst	11	5
0.750 FTE Graduate Asst	10	5
Graduate Instructor	8	4
Teaching fellow	9	

The combined teaching and academic load of any graduate student or instructor who is involved in both activities shall not exceed 18 credit hours per regular semester or nine credit hours for the summer session.

In addition to the above schedule, any graduate student may enroll for not more than one credit hour in graduate seminar courses.

Enrollment Requirements for Students on GTA/GRA/Graduate Assistant or Graduate Fellowships of .25 or More

Graduate students employed by the University or who receive university or departmental fellowships at the .25 FTE or higher level are expected to enroll in at least nine hours per semester. The student would be expected to pay fees on the first six hours. The education fee for hours above six will be covered by a fee waiver. All other charges and fees, including the engineering course supplementary fee, are not changed by this rule, however, courses that are not prerequisites for courses approved on Forms I, I-A, VI, or VI-A for the graduate degree sought shall not be covered by the fee waiver under the 6/9 rule.

NOTE: Graduate students for whom the rule would create a "hardship" could be exempted from the rule by their department chair, upon the advice of their advisor. This exemption should give a reason for the exemption and be sent to the Graduate Studies Assistant in their Dean's Office for informational purposes.

Scholastic Requirements

Graduate grades, with the exception of research, are A, B, C, and F. Temporary grades of DL or I are permitted under special circumstances. A is an honor grade and indicates outstanding work. B means the work is entirely satisfactory. C means that the work will be considered satisfactory to a limited extent in fulfilling the requirements for advanced degrees. F means that the student has not earned credit for the course. Research (490), internship (491), and continuous registration (495) grades are S (satisfactory) or U (unsatisfactory). For ongoing research, a delayed grade, (DL), can be used. Delayed grades may be changed to S upon satisfactory completion of the research.

Grades of S and U are also permitted for Special Problems (300 and 400) and Seminar (310 and 410).

The grade of I (incomplete) is given only at the end of a semester or term when prevented from completing a course by sickness or unavoidable absence within the last four weeks of a semester or term (three weeks of class plus finals week), and then only with a passing grade in the course up to the time of such sickness or unavoidable absence. Incomplete work must be completed before the end of the tenth week of the next fall or winter semester or before the end of the fifth week of the summer session. Failure to do so will result in a grade of F or U being recorded. Beginning with the 1992 fall term, you may not withdraw from a course in which you received an incomplete grade.

The incomplete grade time limit change, effective Winter 2001, states students must complete the work in which they are deficient within one calendar year from the close of the semester in which the "I" grade was recorded. Incomplete grades recorded prior to Winter Semester 2001 will continue under the previous time limit as described in the previous paragraph.

In order for a graduate degree to be granted, the cumulative grade point average must be 3.00 or higher on all graduate work taken at UMR, as well as for all courses on the program of study (excluding courses for undergraduate credit only and also excluding C grades which are earned for courses that cannot be counted for graduate credit because of the time passed since the C grades were awarded). No substitutions may be made on the program of study for courses in which the student has earned grades below B. The student is encouraged to maintain continuously a 3.00 or better cumulative grade point average, and the student's major department may require this. In cases where a graduate student repeats a course, both the original and repeat grades will be used in calculating the average grade point and will appear on the record.

A graduate student accumulating 10 or more credit hours of C and F grades (excluding courses for undergraduate credit only and also excluding C grades which are earned for courses that cannot be counted for graduate credit because of the time passed since the C grades were awarded) shall no longer be a candidate for an advanced degree from this institution. However, the student may be permitted to enroll as a **non-degree graduate student**.

Certifications of Enrollment Status

Certifications of enrollment status to lending agencies should be made through the Registrar's Office, 103 Parker Hall. Certification of full-time or half-time status is based upon the number of credit hours scheduled by the student and includes courses in which the student is enrolled as a hearer. Full-time is based on at least 9 credit hours; half-time is at least 4 credit hours during a normal fall and winter term. For the summer session - full-time is 4 semester hours and half-time is at least 2 credit hours. GRA and GTA appointments are not included in enrollment certifications.

Master Degrees

Programs leading to master degrees are offered. There are three programs leading to Master of Science degrees: M.S. with thesis (30 hours program), M.S. without thesis (minimum 30 hours program, some departments require more), and M.S. for teachers. The Master of Engineering degree is offered in Manufacturing Engineering, Mining Engineering and Materials Engineering. The Master of Arts is offered in economics, English and history as a cooperative degree program with the corresponding department of the University of Missouri-St. Louis. The choice of program is to be made in consultation with the student's advisor and with the approval of the department chair.

Within six weeks after the beginning of the second semester in residence, the student will make a graduate program in consultation with the student's advisor and selected committee.* A minimum of one-half of the course requirements for the degree should be completed after the filing of the graduate program. The chair of the M.S. committee and at least one-half of the members of the M.S. committee should be members of the graduate faculty. Graduate Form I and all M.S. forms (thesis/non-thesis) are available at:

<http://www.eng.umar.edu/Info/gradforms.html>

These forms are also available from the offices of the department chair or the school/college dean. An original and three copies will be completed and submitted to the department chair and school/college dean for approval. If changes to the approved Form I occur, a Graduate Form I-A should be submitted to revise the approved plan of study. Students who fail to comply with the deadline for submission of the Form I will have a registration hold placed on their records by the dean's office.

The master's degree will be granted only if all graduate credit counted toward the degree has been obtained in the previous six (6) years. When recommended by the student's advisory committee, as many as six semester hours of course work completed outside the six-year time limit may be validated by the committee by examination.

Transfer Credits

A maximum of nine hours of course work for M.S. degrees may be transferred from universities outside the University of Missouri. Such credits for transfer must have been registered as graduate courses when they were taken. A minimum grade of B must have been obtained before a transfer course can be used in the graduate program. The courses being transferred must be entered as a part of the student's program as presented on Graduate Form I. The UMR equivalent should be stated, and transcript of the work should accompany the Form I. Approval of the Form I or Form I-A will cause the transfer course to be entered on the student's UMR transcript.

Study Abroad Programs

The Office of International Affairs coordinates study abroad opportunities for UMR students. Students may choose from a variety of study programs. Credit toward the degree program may transfer back to UMR,

with pre-approval. The following provides a sample listing of institutions with which UMR has current study abroad agreements:

- Western Australian School of Mines (Australia)
- University of New South Wales (Australia)
- Hautes Etudes Commerciales Liege (Belgium)
- Provinciale Hogeschool Limburg (The Netherlands)
- Universidad de la Serena (Chile)
- Satakunta Polytechnic (Finland)
- Freiberg University of Mining & Technology (Germany)
- Fachhochschule Aachen (Germany)
- University College Dublin (Ireland)
- Universidad Autonoma Metropolitana Unidad Iztapalapa (Mexico)
- University of Regiomontana (Mexico)
- Akaki Tsereteli State University (Republic of Georgia)
- Kutaisi State Technical University (Republic of Georgia)
- University of the Western Cape (South Africa)
- Bilkent University (Turkey)

Master's Degree with Thesis

The master's degree program with thesis shall consist of a minimum of 30 semester hours of graduate credit over and above the prerequisites. At least six hours of the required work will be from the group of lecture courses bearing numbers in the 400 series, and it is recommended that at least six semester hours will be devoted to courses outside the major department. A maximum of six hours of 200-level out-of-department courses can be accepted in an M.S. program. However, 200 level courses within the major department are not allowed, nor are courses that are required for the bachelor's degree within the major department. Credit for research work conducted in preparation of the thesis is counted in terms of hours making up the total credit hours in research, special problems, special investigations, special readings, and graduate seminar, and must not exceed 12 hours. A minimum of six hours must be devoted to Graduate Research, Course 490.** Research work will normally be conducted on the UMR campus. In special cases, all or part of the research may be conducted elsewhere but must be supervised by a member of the faculty. Such off-campus research must have the prior written approval (Graduate Form "Application to Do Non-resident Research") of the student's graduate advisor, department chair, and school/college dean. Care must be taken to provide an off-campus research and academic experience that promises results equivalent to or superior to that which might be expected at UMR.

For a more effective use of the committee, the candidate is encouraged to: (1) submit a written description of the proposed research to the members of the committee as soon as the topic is decided,

* At least one member of the committee must be from out of the major department or program.

** When co-advising a thesis, course 490 credit may be shared by all departments involved.

(2) obtain written approval of the committee indicating that the proposed research is of M.S. caliber, and (3)

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submit periodic progress reports to the committee and discuss them with committee members or with the committee as a group (frequency of reports and method of discussion should be decided by the committee).

Thesis

The findings and results of research undertaken by the candidate for a master's degree must be presented in a thesis. A minimum of an original and three (3) copies normally will be prepared following these specifications unless a different format is approved in advance.

A manual entitled "Specifications for Theses and Dissertations (T/D)" is available from the Web at:

<http://www.umar.edu/~gradchar/curr.html>

Oral Examination

The student will distribute copies of the thesis to the examining committee and arrange a time and place for the oral defense of the thesis. Each committee member should be allowed to examine the thesis for at least seven days before the oral defense. The student must be enrolled at the time of the examination in accordance with UMR Policy Memorandum Number II-20. Such examinations are normally scheduled only when the school is officially in session. The defense may be comprehensive in character and the candidate should exhibit an acceptable knowledge of a professional area as defined by the program.

Immediately following the thesis defense, the chair of the examining committee will report the action of the committee (Graduate Form II) to the department chair, then to the college/school dean's office. Approval of Form II signifies that the readers have examined the thesis closely for both scientific content and format and deem it worthy of acceptance by the graduate faculty as meeting the requirements for a master's degree.

Approval and Filing of the Thesis

At the close of a successful thesis defense, the members of the examining committee will sign the thesis title sheet to signify that they have read and approved the thesis. The approved copy of the thesis, including any corrections indicated by the examining committee, must be taken to the office of the school/college dean where it will be carefully checked to ensure the proper format has been followed.¹ After approval by the school/college dean, it will be forwarded to the UMR Library.

The student will present a copy of the approved thesis to the department chair, a second copy to the advisor, and will retain a copy.

Master's Degree Without Thesis

The master's degree program without thesis shall consist of a minimum of 30 hours of graduate credit over and above prerequisites. At least nine semester hours of required work will be from the group of lecture courses bearing numbers in the 400 series, and it is recommended that at least six semester hours will be devoted to courses outside the major department. A maximum of six

hours of 200-level out-of-department courses can be accepted in an M.S. program. However, 200 level courses within the major department are not allowed, nor are courses that are required for the bachelor's degree within the major department. The total credit hours in special problems, special investigations, special readings, and graduate seminar must not exceed four hours. The candidate also must successfully complete a final comprehensive examination (**School of Mines and Metallurgy and School of Engineering no longer require M.S. Comprehensive Exam**) which will be conducted by an examining committee appointed by the school/college dean, (Graduate Form I-B). The committee will consist of at least five members, including at least one member from outside the candidate's department. The chair and at least one-half of the members should be graduate faculty members. This examination will be given only once each semester or summer session and not earlier than six weeks before Friday of the end of the semester or three weeks before the end of the summer session. The candidate will have passed the comprehensive examination if all, or all but one, of the committee members vote to pass. A student who fails the examination must take it again at the next regular scheduled examination time. A student who fails a second time will no longer be eligible for a master's degree.

Students who have passed a written Ph. D. qualifying examination, have received grades of B or better in all courses as graduate students, and have a 3.5 or better cumulative GPA in their courses for graduate credit may be excused from the M.S. comprehensive upon the recommendation of the department and school/college dean.

Second Master's Degree

A student having completed the master's degree at UMR or elsewhere in one major shall be eligible to receive a second master's degree upon the satisfactory completion of a minimum of an additional 24 semester hours of graduate academic work (thesis or nonthesis). All other requirements including the use of out-of-department representatives on the appropriate committees must be fulfilled. In planning dual master's degrees, please note the need for defining which is to be completed first. A change in order will necessitate a change in program. International students must contact International Affairs Office to pursue this option.

Master of Science For Teachers

The master's degree program for teachers is primarily designed for high school teachers in the physical sciences and mathematics.

¹ Liberal choices are allowed relative to the style manual used in the preparation of the thesis. Approval of the thesis requires following rigidly the style manual selected and/or rules obtainable from the Web at: <http://www.umar.edu/~gradchar/curr.html> and providing for a quality level suitable for publication.

Admission to Master of Science for Teachers Program

Because of possible variation in the preparation of candidates, the program of each candidate will be planned and supervised by an advisory committee appointed by the school/college dean. To be admitted for study under this program, the candidate must have;

- a. A degree from an accredited college.
- b. A teaching certificate for mathematics, general science, or one of the physical sciences.
- c. Previous training totaling, as a minimum, 36 semester hours in mathematics and physical sciences, including 24 semester hours in either chemistry, mathematics, geology, or physics.
- d. Records resulting from the Graduate Record Examination.

General Requirements

The candidate must complete at least 32 hours of courses numbered 200 or higher in sciences and mathematics. These must include at least one course of three hours or more numbered 400 or above, exclusive of seminar, special problems, and research. A maximum of nine hours may be transferred from other colleges or universities. The entire program must be approved by the school/college dean on Graduate Form I. The cumulative grade point average for all courses on the student's Graduate Form I must be 3.00 or better.

Upon or near completion of the course work, the candidate must satisfactorily pass a comprehensive final examination. A committee, appointed by the school/college dean, will conduct and grade a written and oral examination of each candidate.

Specific Requirements

Mathematics major: The candidate must have a minimum total of 42 semester hours of mathematics in the student's undergraduate and graduate program. In addition, the student should have supporting courses in the physical sciences and must have at least one course in physics.

Physical science major: The candidate must complete at least 40 semester hours in the major field during the undergraduate and graduate programs, and should have the equivalent to Mathematics/Statistics 22 (Integral Calculus) for admission to the degree program. If not, it must be included as part of the program but will not count toward satisfying the 32 hours.

Master of Engineering Degree

The Master of Engineering degree is a practice oriented program designed for full time students with the possibility of completion of degree requirements in one year, and for students working in industry through distance education. The choice of this degree program

is made in consultation with the student's advisor and with the approval of the program director. Currently, the Manufacturing Engineering and Mining Engineering programs offer a Master of Engineering (M. Eng.) degree.

General Requirements

The master of engineering program with project shall consist of a minimum of 30 semester hours of graduate credit over and above the prerequisites. At least six semester hours of the required work be from the group of lecture courses bearing numbers in the 400 series, and it is recommended that at least three semester hours will be devoted to courses outside the major department. A maximum of six hours of 200-level out-of-department courses can be accepted in the M.Eng. program. Credit for research and development work conducted in preparation for the practice oriented project is counted in terms of hours making up the total credit hours by mastering and improving at least one manufacturing process or system, but not less than 3 hours. A minimum of six hours must be devoted to Graduate Research, Course 400.* (*Depending on the advisor's affiliation, course 400 credit is registered under the department involved.) Project work can be conducted on the UMR campus or in industry with the approval of the advisor. Such industrial projects must be supervised by an industrial supervisor and have prior written approval (Graduate Form "Application to Do Non-resident Research") of the student's graduate advisor and program director. Care must be taken to provide an industrial project that promises results equivalent to or superior to that which might be expected at UMR.

For more effective use of the committee, the candidate is encouraged to: (1) submit a written description of the proposed project to the members of the committee as soon as the topic is decided, and (2) obtain written approval of the committee indicating that the proposed project is of M.Eng. caliber.

Project Report

The findings and results of the practice oriented project undertaken by the candidate for a master of engineering degree must be presented in a report. A minimum of one (1) original and three (3) copies normally will be prepared following a format approved in advance by the advisor. After examining the report, the advisor will authorize the student to conduct an oral presentation of the project.

Oral Presentation

The student will distribute copies of the report to the project committee and arrange a time and place for the presentation of the project. The student must be enrolled at the time of the presentation in accordance with UMR Policy Memorandum Number II-20. Such presentations are normally scheduled only when the school is officially in session. Each committee member should be allowed to examine the report for at least three days before the oral presentation. During the presentation, the candidate should exhibit an acceptable knowledge of a professional area as defined by the program.

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In order for the candidate to pass the project requirement, all the project committee must vote affirmatively. If a majority of the committee votes not to pass the candidate, the program director shall appoint a new project committee on which the dissenting member may be replaced, and the new committee will administer a second presentation. A student who fails a second time will no longer be eligible for a master of engineering degree.

Immediately following the presentation, the chair of the committee will report the action of the committee to the program director.

Procedure for Master of Engineering Candidate

1. Go to steps 1 through 4 for regular graduate students.
5. Submits report;
6. Advisor authorizes presentation;
7. Candidate distributes copies of the report to project committee at least three days before the oral presentation;
8. Arranges a date, time and place for the oral presentation of the project (the student must be enrolled at the time of the examination);
9. Chair of examining committee reports the action of the committee to the program director;
10. If all requirements are met, student receives degree, granted by the Board of Curators upon the recommendation of the graduate faculty.

Specific Requirements

The candidate must complete at least 30 semester hours. A minimum 3-hour practice oriented project is required. The course requirement includes 12 credit hours from the Manufacturing Core Curriculum (3 credit-hour core course from each area); 6 credit hours of 400-level courses in manufacturing; 3 credit hours of approved Mathematics or Computer Science from approved course list, and 6 credit hours of graduate courses in manufacturing.

Master of Arts in Economics, English and History

(Available as a cooperative degree program with the corresponding department of the University of Missouri-St. Louis)

The departments of Economics, English, History and Political Science have entered into a cooperative agreement with the corresponding department of the University of Missouri-St. Louis to offer the Master of Arts in Economics, English and History.

The agreement permits students to take up to 12 credit hours on the UMR campus. However, students may take only 9 credit hours at the 300 level.

Procedures for Master's Candidates

(All students are required to have completed admissions requirements including transcripts, GRE scores, and TOEFL, if required.)

Regular Graduate Student (with thesis)

1. Registers (consults with graduate advisor);
2. Selects advisor and committee and completes Form I* (original plus three copies) within six weeks after the beginning of the second semester in residence;
3. Completes academic requirements;
4. Within four weeks of the beginning of their last semester, students must check with the registrar to make application for diploma;
5. Candidate distributes copies of the thesis to examining committee at least seven days before the oral defense;
6. Arrange a date, time, and place for the oral defense of the thesis (the student must be enrolled at the time of the examination);
7. Chair of examining committee reports the action of the committee to the school/college dean (Graduate Form II, three copies, accompanied by approved copy of thesis);
8. When all requirements have been met and payment of enrollment or examination fees made, the dean of the school/college forwards the approved thesis to the UMR library;
9. Student presents one copy to the department chair, one to the advisor, and retains one copy;
10. If all requirements are met, student receives degree, granted by the Board of Curators upon the recommendation of the graduate faculty.

Regular Graduate Student (without thesis)

1. Registers (consults with advisor);
2. Obtains advisor and completes Graduate Form I*(original plus three copies) not later than six weeks after the beginning of the second semester in residence;
3. Completes academic requirements;*
4. Within four weeks of the beginning of the last semester, student must check with the registrar to make application for diploma;
5. Graduate advisor recommends to the school/college dean's office the names of five members, approved by the department chair, (the chair and at least one-half of the members must be graduate faculty members) of comprehensive examining committee (one out-of-department member knowledgeable of out-of-department courses) (Graduate Form I-B); School of Mines and Metallurgy and School of Engineering no longer require M.S. Comprehensive Exam;
6. Dean of school/college appoints committee;
7. Candidate takes the examination which is administered only once each semester or summer session and not earlier than six weeks before the end of the semester (three weeks before the end of the summer session) (the student must be enrolled at the time of the examination);

8. Chair of examining committee reports the action of the committee to the school/college dean (Graduate Form III, three copies).
9. If all requirements are met, student receives degree, granted by the Board of Curators upon the recommendation of the graduate faculty.

* Students who fail to comply with the deadline for submission of the Form I will have a registration hold placed on their records by the dean's office.

Conditional Graduate Student (Degree Seeking)

1. Consults with academic advisor and registers.
2. Completes a minimum of 12 semester hours of graduate course work with a cumulative grade point average of 3.00 or higher; no more than one semester beyond the semester of completion of the first 12 hours taken as a conditional student may be allowed in the conditional status;
3. Go to step 2 for regular graduate students.

Doctor of Philosophy Degrees

The degree of doctor of philosophy is awarded to students who have pursued graduate study without serious interruption, who have submitted an acceptable dissertation, passed all prescribed examinations, and satisfactorily met all requirements described below. Recipients of this degree are attested by the graduate faculty as having attained a high level of learning by extensive study in some special branch and as having developed an ability to carry on independent research.

Acceptance of Candidates

To initiate candidacy¹ for the degree of doctor of philosophy, the student will be required to pass a qualifying examination administered by the department in which the student expects to become a candidate. This examination may be taken prior to enrollment, if desired.² The department chair will report to the dean of the school/college the results of the qualifying examination (Graduate Form IV). Ph.D. forms are available at <http://www.eng.umn.edu/Info/gradforms.html>

The student will consult with an advisor of his/her choice to select an advisory committee. The committee will consist of at least five members. Four of the committee members should be members of the graduate faculty. The committee will include at least one member from outside the candidate's department. One member also should represent the department most closely associated with any minor field of study elected by the student. The names of the proposed members will be

transmitted (Graduate Form V) by the student's department chair to the school/college dean for appointment. Additional members and replacement members will be appointed using Graduate Form VI-A.

For a more effective use of the committee, the candidate is encouraged to: (1) submit a written description of the proposed research to the members of his/her committee as soon as he/she decides upon the topic, (2) obtain written approval of the committee indicating that the proposed research is of Ph.D. caliber, and (3) submit periodic progress reports to the committee and discuss them with committee members or with the committee as a group (frequency of reports and method of discussion should be decided by the committee). Passing of the qualifying examination and the approval of a course of study and research by the advisory committee, department chair, and the school/college dean will signify acceptance as a candidate for the degree of doctor of philosophy.

A person who has held the rank of assistant professor or higher at UMR is not eligible to become a candidate for the Ph.D. at this institution.

Program of Study

Prospective Ph.D. candidates who have received a bachelor's degree but not a master's, should consult with their advisor, and an advisory committee (recommended by the department on Graduate Form V), shall be approved and appointed by the school/college dean during the second semester of attendance as a graduate student. The committee will aid the student in preparing an outline of the course work and the research investigation proposed for the dissertation.

Prospective Ph.D. candidates who have received a master's degree should consult with their advisor and select the proposed advisory committee (Graduate Form V) for appointment by the school/college dean during the early part of their first semester of attendance after having received the master's degree. They also must have reported the results of the qualifying exam on Graduate Form IV. The committee will aid the student in preparing an outline of the course work and the research investigation proposed for the Ph.D. This outline (Graduate Form VI-Ph.D.) must be submitted to the school/college dean for approval before the student enrolls for a second semester. The program will show all graduate work above the baccalaureate to be considered as part of the doctoral program.

Residency Requirements

The candidate for the degree of doctor of philosophy will normally complete the equivalent of three years (six semesters, 72 hours minimum) of full-time work beyond the bachelor's degree, at least half of which must be taken at UMR. For those holding a master's degree from UMR or another institution, the requirement can be met by completing the equivalent of two years (four semesters) of full-time work beyond the master's degree. This will normally include a minimum of two consecutive semesters in residence at UMR with a graduate registration of at least nine hours per semester. If

¹ Technically a student can become a doctoral-level student only after satisfactorily completing 30 credit hours of graduate study. Prior to that time, the student is recorded as a master's-level student or candidate.

² The School of Engineering requires that the qualifying exam be passed by the end of the second semester after completion of the M.S. degree. The Program Study (Form IV) must be submitted by the end of the qualifying semester.

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any of the years of advanced work have been spent away from UMR, the school/college dean, upon recommendation of the student's advisory committee, will decide in each case whether these years may be properly regarded as having been spent under suitable guidance and favorable conditions. At least 15 hours of graduate course work, exclusive of research, special problems, special investigations and seminars, must be taken on the Rolla campus.

For the purpose of computing the equivalent of full time work, the following table will be used:

12 to 16 hours per session	0.500 year
9 to 11 hours per session	0.375 year
6 to 8 hours per session	0.250 year (6 to 9 hours, summer)
3 to 5 hours per session	0.125 year
0 to 2 hours per session	0.0

Subjects of Study

The subjects of study may be chosen from one or more departments, as determined by the advisory committee but shall constitute a definite plan of training for research or scholarly investigation in some particular field. A major field of study must be designated. A student is encouraged to elect one minor field of study consisting of at least 12 semester hours of work outside his or her major area of study.

The doctoral program will include at least 24 credit hours of dissertation research (490)* and a minimum of 24 credit hours (exclusive of 300, 400, & 490) of course work as part of the degree requirements. Deviations from this must receive special approval from the school/college dean. It is recommended that at least 15 credit hours from the 400 series of lecture courses be included in the doctoral program.

Correspondence and extension courses do not form part of the program for the Ph.D. degree except as they may be part of a master's program. Additional work of this type beyond that allowed for the master's degree is not acceptable.

Credit for research work conducted in the preparation of the dissertation is counted in terms of hours making up the total credit hours required for the degree. Research work will normally be conducted on the UMR campus. In special cases, all or part of the research may be conducted elsewhere but must be supervised by a member of the faculty. Such research must have the prior written approval of the student's advisory committee, department chair and school/college dean.

The Ph.D. degree will be granted only if all graduate credit counted toward the degree has been obtained in the previous eight years unless a formal request for an extension is initiated by the advisor and approved by the department chair and the school/college dean. An extension, if granted, may involve revision of the candidate's program to update course work and research. Alternately, for candidates who have the master's degree or its equivalent, (first 30 hours of graduate credit) or who have passed the qualifying examination, all remaining credit must be obtained within the last six years.

Acceptance of the prior work from the master's degree or its equivalent, as part of the doctoral program, is up to the discretion of the student's advisory committee.

Languages

The decision as to any doctoral language requirement rests with the department and the candidate's advisory committee. Any language requirement will be found in the departmental descriptions. The foreign language requirement may be met either before or after the comprehensive examination is passed.

Examinations

The student is required to pass a comprehensive examination and a final examination, both planned and administered by the student's advisory committee during his/her candidacy.

Comprehensive Examination

The school/college dean will authorize the student's advisory committee to administer the comprehensive examination after the student has completed the course work on the doctoral program. It will be both written and oral.

With the approval of the student's advisory committee, the written portion of the examination may be administered by the candidate's department, but the final judgment of the candidate's performance will be left to the advisory committee. Upon satisfactory completion of the written examination, the candidate will be orally examined by the advisory committee. It is recommended that these examinations be completed within a 30-day period.

A report of the comprehensive examination will be sent to the school/college dean (Graduate Form VII). A candidate will be considered to have passed if all, or all but one of the advisory committee vote that the student pass.

If failure is reported, the advisory committee will recommend suggested work or other remedial measures to the candidate. A second comprehensive examination may not be scheduled until after the lapse of 12 weeks. Failure of the second examination will automatically terminate the candidacy of the student.

Dissertation

The dissertation, embodying the results of an original investigation, must be written upon a subject approved by the major advisor.

A manual* entitled "Specifications for Thesis and Dissertations (T/D)" is available at

<http://www.umn.edu/~gradchar/curr.html>

The advisory committee shall have examined the dissertation closely for both scientific content and format, and deem it worthy of acceptance by the graduate faculty as meeting the requirements for the doctor of philosophy degree. The school/college dean will authorize the student's advisory committee to administer the final examination. It may not be scheduled sooner than 12 weeks after the completion of the comprehensive examination. Notice of the final examination shall be publicly announced by the school/college dean's office at least one week prior to the examination.

* When co-advising a dissertation, course 490 credit may be shared by all departments involved.

Final Examination

The final examination will be an oral defense of the dissertation and may be attended by any interested person, who may question the candidate with permission of the chair of the advisory committee.

A report of the examination will be sent to the school/college dean (Graduate Form VIII). A candidate will be considered to have passed if all, or all but one of the advisory committee vote for passing. If failure is reported, the advisory committee will recommend suggested work to be completed or other remedial measures to be taken before another examination is scheduled.

When a candidate has completed all requirements for the degree of doctor of philosophy, the office of the dean of the school or college will forward the copy of the candidate's approved dissertation to the UMR Library.

Shared Doctoral Programs

Through its identification of faculty qualified to direct doctoral candidates on all four campuses, the University of Missouri provides a unique opportunity for breadth of experience in doctoral programs. Candidates admitted to doctoral status on one campus may plan with the consent of their committee, either course work or research on another campus. Advisory committee membership may involve more than one campus, and dissertations may be pursued under the direction of an appropriate doctoral faculty member on a second campus.

Residency and other routine requirements of the degree-granting campus must be followed, but as the requirements for all campuses are similar, this should provide no unusual problem. The appropriate deans should be involved in shared programs as early as possible to prevent misunderstandings and ease avoidable problems.

Liberal choices are allowed relative to the style manual used in the preparation of the dissertation. Approval of the dissertation requires following rigidly the style manual selected and/or rules obtainable from the Web at:

<http://www.umar.edu/~gradchar.curr/html>

and providing for a quality level suitable for a publication

Procedures for Ph.D. Degree Candidates

1. Completes admission requirements;
2. Passes a qualifying examination, administered by the student's department, as early as possible;
3. Department chairmen reports the results of the qualifying examination to the school/college dean (Graduate Form IV);
4. Consults with advisor to select an advisory committee of five members at the earliest opportunity after completion of qualifying examination. With previous graduate work at UMR this can normally be accomplished during the first semester. In all instances it should be completed not later than six weeks into the second semester.
5. The advisor, with the approval of the department chair, requests the school/college dean to appoint an advisory committee (Graduate Form V);
6. Solicits the aid of the committee in preparing an outline of courses and research. Note: A standard

format (Graduate Form VI-Ph.D.) must be followed.

7. After student has completed all courses on the doctoral program, the advisor requests school/college dean to authorize the advisory committee to administer the comprehensive examination.
8. Advisory committee reports the results of the comprehensive examination to the school/college dean (Graduate Form VII);
9. After the student passes the comprehensive examination, continuous enrollment must be maintained in accordance with Policy Memo II-20, until the degree is completed or the candidacy is canceled;
10. Within four weeks of the beginning of the last semester, the student must check with the registrar to make application for diploma;
11. The student and the advisor select the date, time, and place of the examination and inform the school/college dean's office electronically so that the final examination can be publicly announced at least one week in advance. Note: The student must be enrolled at the time of the examination.
12. Advisory committee reports results of the final examination to the school/college dean (Graduate Form VIII) accompanied by approved copy of dissertation, "B&H (University Microfilm Inc.) Doctoral Dissertation Agreement" form, and "Survey of Earned Doctorates" form (obtain from school/college dean's office).
13. When all requirements have been met, the dean's office of the school/college forwards the approved dissertation to the UMR library; student presents one copy to the department chair, one to the advisor, and retains a copy;
14. Board of Curators grants degree upon recommendation of graduate faculty.

Doctor of Engineering

The degree of doctor of engineering, like the degree of doctor of philosophy, represents the highest level of attainment in engineering study and practice. This degree is awarded to candidates who have pursued a broad program of study, completed an acceptable engineering internship, passed all prescribed examinations, submitted an acceptable practice-oriented dissertation, and met satisfactorily all requirements described here.

Following admission to graduate study, a student can initiate candidacy for the doctor of engineering degree by consulting with the advisor about the selection of an advisory committee. The committee should include the candidate's major advisor plus at least four other faculty members. The committee members should be representative of the departments included in the candidate's intended plan of study. This committee will aid the student in preparing the plan of study, which will include the course work and plans for an engineering internship, an outline of the project which the student plans to follow for the dissertation, and a program for completing residence requirements. Approval by the

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dean of the school/college of the student's plan of study will signify acceptance of the student as a candidate for the degree of doctor of engineering.

A person who has held the rank of assistant professor or higher at UMR is not eligible to become a candidate for the doctor of engineering degree at this institution.

Residence Requirements

A candidate for the degree of doctor of engineering will complete the equivalent of three years (six semesters) of full-time work beyond the bachelor's degree. Those candidates who hold master's degrees can meet the requirements by completing the equivalent of four semesters of full-time work beyond the master's degree. These conditions normally include a minimum of two semesters in residence at UMR with a graduate registration of at least 12 hours per semester. If any of the years of advanced work have been spent away from UMR, the dean of the school/college, upon recommendation of the student's advisory committee, will decide in each case whether these years may be properly regarded as having been spent under suitable guidance and favorable conditions. For the purpose of computing the equivalent of full-time work, the following table will be used.

12 to 16 hours per session	0.500 year
9 to 11 hours per session	0.375 year
6 to 8 hours per session	0.250 year
(6 to 9 hours, summer)	
3 to 5 hours per session	0.125 year
0 to 2 hours per session	0.0

The doctor of engineering degree will be granted only if all graduate credit counted toward the degree has been obtained in the previous eight years unless a formal request for an extension is initiated by the advisor and approved by the department chair and the school/college dean. An extension, if granted, may involve revision of the candidate's program to update course work and research.

Correspondence and extension courses do not form part of the program for the doctor of engineering degree except as they may be part of a master's program.

Qualifying Examination

A qualifying examination will be administered by the faculty of the candidate's major department. The information from this examination will serve as a qualifier for the student and will be used by the student's advisory committee in planning the program of study.

Course Work

The course work will normally include two areas of emphasis in engineering. A third technical area of emphasis should be selected from the physical sciences, computer science, mathematics, or another field of engineering. In addition, a non-technical group of courses of 9 to 12 hours should be included. This group could be selected from such areas as foreign language, law, engineering management, psychology, or sociology. The formal course work would be expected to consist of at least 65 hours with an average being about 72 hours.

The allocation of the hours between the three technical areas will be at the discretion of the student's committee; however, at least nine hours in each area must be included to provide the depth desired.

Internship

The internship involves a minimum of one year of planned and approved high-level engineering experience. The candidate and the major advisor will plan the internship in cooperation with the interning organization (normally an industrial concern or government laboratory). The candidate then prepares a detailed proposal for the internship which sets forth the goals of the internship, the tasks to be accomplished, and the facilities at the intended site. This proposal must be approved by the candidate's committee, the major department chair and the school/college dean prior to beginning the internship. At the time the internship is approved, the candidate's internship advisor* (the student's supervisor at the interning organization) will be added to the advisory committee. The organization must agree to visits to the internship site by the candidate's major advisor and/or advisory committee members. It also must be agreed that any results of the internship may be published by the candidate although reasonable proprietary rights of the interning organization will be protected. Responsibility for arranging the internship, including site selection and financial compensation during the period of the internship, lies with the candidate.

The internship and preparation of the candidate's dissertation are to be counted in terms of hours making up the total credit hours required for the degree. Approximately 18 to 25 hours credit for these phases of the degree will be regarded as a portion of the total requirement of 90 hours for the doctor of engineering degree.

Examinations

The student is required to pass a comprehensive examination and a final examination during candidacy. The comprehensive examination planned and administered by the committee, will cover the course work contained in the candidate's plan of study. It will be both written and oral. The final examination, the candidate's oral defense of the dissertation, will be held in the presence of the advisory committee and others.

Dissertation

The dissertation embodying the results of an original engineering investigation, must be written upon a subject approved by the major advisor. Normally the dissertation will be directly related to the candidate's internship. The dissertation must represent significant, creative, and independent engineering work. A manual titled "Specifications for Thesis and Dissertations (T/D)" is available at:

<http://www.umn.edu/~gradchar/curr.html>

Procedures for Doctor of Engineering Candidates

1. Completes admission requirements;
2. Passes as early as possible a qualifying examination, administered by the faculty of the major department;
3. Department chair reports the results of the qualifying examination to the school/college dean (Graduate Form IV);

* The internship advisor is selected to have thorough education and experience, doctoral equivalency qualifications.

4. Consults with the advisor to select an advisory committee of at least five members. This should be done by graduate students who have completed 30 hours of graduate studies or who have obtained a master's degree. (A tentative program may be planned much earlier);
5. Requests the department chair to approve the advisory committee (Graduate Form V) and to submit it for approval to the school/college dean. Changes in committee membership will be processed using Graduate Form VI-A;
6. Solicits the aid of the committee in preparing a plan of study and internship. Note: (a) A standard format (Graduate Form VI-DE) must be followed, (b) the plan is not to be sent to the department chair or school/college dean for approval until the student has passed the qualifying examination;
7. Major advisor requests the school/college dean to authorize the advisory committee to administer the comprehensive examination after the candidate has completed all courses on his or her doctoral program.
8. Advisory committee reports the results of this examination to the school/college dean (Graduate Form VII). A candidate is considered to have passed if all, or all but one, of the advisory committee vote for passing. If failure is reported, the advisory committee recommends remedial measures to the candidate. A second comprehensive examination may not be scheduled until after the lapse of 12 weeks. Failure of the second examination automatically terminates the candidacy;
9. After the student passes the comprehensive examination for the doctorate degree, continuous enrollment must be maintained in accordance with Policy Memo II-20 until the degree is completed or the candidacy is canceled;
10. Candidate completes the engineering internship. The candidate's industrial supervisor is added to the committee at the beginning of the internship;
11. Within four weeks of the beginning of the last semester, the student must check with the registrar to make application for diploma;
12. The candidate and the advisor select the date, time and place of the examination and inform the school/college dean so that the examination can be publicly announced at least one week in advance. A candidate is considered to have passed if all, or all but one, of the advisory committee vote for passing. If failure is reported, the advisory committee recommends remedial measures to be taken before another examination is scheduled. Note: The student must be enrolled at the time of the examination.
13. Advisory committee reports results of final examination to the school/college dean on Graduate Form VIII, accompanied by approved copy of dissertation, completed "UMI Doctoral Dissertation Agreement" form, and "Survey of Earned Doctorates" form;
14. When all requirements have been met and payment of enrollment or examination fees made, the dean of the school/college forwards the approved dissertation to the UMR library. Student presents one copy to the department chair, one to the advisor, and retains a copy;
15. Board of Curators grants degree upon recommendation of graduate faculty.

