

Date Submitted: 04/18/24 12:37 pm

## Viewing: **CHEGMS : Chemical Engineering, Master of Science in Chemical Engineering**

Last approved: 04/03/17 9:54 am

Last edit: 09/11/24 5:03 pm

Changes proposed by: chesteki

Catalog Pages Using  
this Program

[Chemical Engineering.\(CHEG\)](#)

Submitter: 575-3416      User ID: chesteki      Phone:

Program Status      Active

Academic Level      Graduate

Type of proposal      Major/Field of Study

Select a reason for this modification

Making Minor Changes to an Existing Certificate, Degree or Program (including 15 or fewer hours, admission/graduation requirements, Focused Studies or Tracks)

Are you adding a concentration?

No

Are you adding or modifying a track?

No

Are you adding or modifying a focused study?

No

Effective Catalog Year      Fall 2025

College/School Code

College of Engineering (ENGR)

Department Code

Department of Chemical Engineering (CHEG)

### In Workflow

1. ENGR Dean Initial
2. GRAD Dean Initial
3. Director of Curriculum Review and Program Assessment
4. Registrar Initial
5. Institutional Research
6. CHEG Chair
7. ENGR Curriculum Committee
8. ENGR Faculty
9. ENGR Dean
10. Global Campus
11. Provost Review
12. Graduate Council
13. Faculty Senate
14. Provost Final
15. Registrar Final
16. Catalog Editor Final

### Approval Path

1. 01/26/18 8:34 pm  
Norman Dennis (ndennis): Rollback to Initiator
2. 02/06/18 10:27 am  
Norman Dennis (ndennis): Approved for ENGR Dean Initial
3. 02/06/18 10:34 am  
Pat Koski (pkoski): Approved for GRAD Dean Initial

Program Code CHEGMS  
Degree Master of Science in Chemical Engineering  
CIP Code

4. 02/06/18 1:03 pm  
Alice Griffin  
(agriffin): Rollback  
to ENGR Dean Initial  
for Director of  
Program  
Assessment and  
Review
5. 02/19/18 9:51 am  
Norman Dennis  
(ndennis): Rollback  
to Initiator
6. 03/13/18 12:27 pm  
Norman Dennis  
(ndennis): Rollback  
to Initiator
7. 06/10/21 10:23 am  
Norman Dennis  
(ndennis): Rollback  
to Initiator
8. 06/14/21 3:09 pm  
Norman Dennis  
(ndennis): Approved  
for ENGR Dean  
Initial
9. 06/14/21 4:56 pm  
Jim Gigantino  
(jgiganti): Approved  
for GRAD Dean  
Initial
10. 06/16/21 2:45 pm  
Alice Griffin  
(agriffin): Approved  
for Director of  
Program  
Assessment and  
Review
11. 07/02/21 11:53 am  
Lisa Kulczak  
(lkulcza): Rollback to  
Initiator

12. 05/02/22 8:55 am  
Kevin Hall (kdhall):  
Rollback to Initiator
13. 07/05/22 9:13 am  
Kevin Hall (kdhall):  
Approved for ENGR  
Dean Initial
14. 07/05/22 9:19 am  
Jim Gigantino  
(jgiganti): Rollback  
to Initiator
15. 07/26/23 11:20 am  
Kevin Hall (kdhall):  
Approved for ENGR  
Dean Initial
16. 07/26/23 11:35 am  
Jim Gigantino  
(jgiganti): Approved  
for GRAD Dean  
Initial
17. 08/21/23 6:53 pm  
Lisa Kulczak  
(lkulcza): Approved  
for Director of  
Curriculum Review  
and Program  
Assessment
18. 08/22/23 7:22 am  
Gina Daugherty  
(gdaugher):  
Approved for  
Registrar Initial
19. 08/22/23 9:49 am  
Doug Miles  
(dmiles): Approved  
for Institutional  
Research
20. 04/03/24 7:49 am  
Gina Daugherty  
(gdaugher):  
Rollback to Initiator

21. 04/30/24 10:28 am  
Kevin Hall (kdhall):  
Approved for ENGR  
Dean Initial
22. 05/07/24 12:30 pm  
Ed Bengtson  
(egbengts):  
Approved for GRAD  
Dean Initial
23. 08/26/24 5:36 pm  
Lisa Kulczak  
(lkulcza): Approved  
for Director of  
Curriculum Review  
and Program  
Assessment
24. 08/27/24 7:32 am  
Gina Daugherty  
(gdaugher):  
Approved for  
Registrar Initial
25. 08/27/24 2:18 pm  
Doug Miles  
(dmiles): Approved  
for Institutional  
Research
26. 09/05/24 11:16 pm  
Keisha Walters  
(keishaw): Approved  
for CHEG Chair
27. 10/17/24 12:23 pm  
Manuel Rossetti  
(rossetti): Approved  
for ENGR  
Curriculum  
Committee
28. 11/13/24 8:16 am  
Kevin Hall (kdhall):  
Approved for ENGR  
Faculty

- 29. 11/13/24 8:17 am  
Kevin Hall (kdhall):  
Approved for ENGR  
Dean
- 30. 11/13/24 9:15 am  
Suzanne Kenner  
(skenner): Approved  
for Global Campus
- 31. 11/13/24 11:15 am  
Jim Gigantino  
(jgiganti): Approved  
for Provost Review
- 32. 11/23/24 7:05 am  
Ed Bengtson  
(egbengts):  
Approved for  
Graduate Council

### History

- 1. Mar 21, 2016 by  
Christa Hestekin  
(chesteki)
- 2. May 18, 2016 by  
Lisa Kulczak (lkulcza)
- 3. Mar 1, 2017 by  
Christa Hestekin  
(chesteki)
- 4. Apr 3, 2017 by  
Charlie Alison  
(calison)

14.0701 - Chemical Engineering.

#### Program Title

Chemical Engineering, Master of Science in Chemical Engineering

#### Program Delivery

##### Method

On Campus

Is this program interdisciplinary between two or more colleges or schools?

No Yes

Do the proposed changes impact any specific course(s) from another college or school?

No

What are the total 30  
hours needed to  
complete the  
program?

## Program Requirements and Description

Requirements

or

~~Admission to the Degree Program: The specific requirements for admission to the program and completion of an advanced degree in chemical engineering are determined by the Graduate School of the University of Arkansas and the Graduate Studies Committee of the Ralph E. Martin Department of Chemical Engineering. A general summary of departmental requirements is given below and detailed information may be obtained from the Chemical Engineering website. An undergraduate or M.S. degree in chemical engineering is recommended for admission to the graduate program, but students with a B.S. in another field of engineering or in a natural science may also enter the program by first taking certain undergraduate chemical engineering courses to prepare them for graduate study. The requirements for admission to the department's graduate program are: A grade point average of 3.0 out of 4.0 in a B.S. M.S. in chemical engineering or, if the student does not have a degree in chemical engineering, satisfactory completion of the department's undergraduate deficiency program. A minimum GRE score of 155 on the quantitative section of the exam and a minimum of 307 combined score on the quantitative and verbal sections, taken within five years prior to application. Students without a B.S. degree from a U.S. university will need a minimum score on one of the following English proficiency exams: TOEFL paper exam — 550; iBT computer exam — 80; or IELTS — 6.5. The test must have been taken within two years prior to application. To enter the Ph.D. program, a majority vote by the Graduate Studies Committee of the Ralph E. in Martin Department of Chemical Engineering~~

is required:

An undergraduate or M.S. degree in Chemical Engineering can be obtained through either a research-based (thesis) or course-based (non-thesis) route. The thesis M.S. Financial aid may be available for the student's stipend and/or tuition on a case-by-case basis. This is decided in the department. Details about these requirements are in the Chemical Engineering Department Graduate Student Handbook, available as a downloadable PDF. ~~Research Program: The thesis M.S. degree and the Ph.D. degree involves involve~~ an interactive, hands-on program that exposes the graduate student to the techniques, procedures, and philosophy necessary for successful and ethical research. The students will work closely with their supervising professor and committee to perform original research on a topic of importance to the profession. The student will participate in the planning, managerial, budgetary, experimental, and reporting aspects of his/her research projects. The result will be a thesis (~~for the thesis master's degree~~) or a dissertation (~~for the Ph.D.~~), both of which should result in at least one journal or conference publication for the student. Active research interests of the faculty are listed on the department's

[research page](#). [The non-thesis M.S. degree includes a capstone project that is outlined in the Chemical Engineering Department Graduate Student Handbook, which is available on the department's website.](#)

**Requirements for the non-thesis M.S. Degree:** At least 30 hours of coursework ~~course work~~ as follows:

<u>MATH 4423</u>	<u>Course MATH 4423 Not Found</u> <sup>1</sup>	<u>3</u>
<u>CHEG 5113</u>	<u>Course CHEG 5113 Not Found</u>	<u>3</u>
<u>CHEG 5133</u>	<u>Course CHEG 5133 Not Found</u>	<u>3</u>
<u>CHEG 5333</u>	<u>Course CHEG 5333 Not Found</u>	<u>3</u>
<u>CHEG 6123</u>	<u>Course CHEG 6123 Not Found</u>	<u>3</u>
<u>MATH 54203</u>	<u>Introduction to Partial Differential Equations</u>	<u>3</u>
<u>CHEG 51103</u>	<u>Transport Processes I</u>	<u>3</u>
<u>CHEG 51303</u>	<u>Advanced Reactor Design</u>	<u>3</u>
<u>CHEG 53303</u>	<u>Advanced Thermodynamics</u>	<u>3</u>
<u>CHEG 61203</u>	<u>Transport Processes II</u>	<u>3</u>
Nine hours of a 4000 or 5000 level CHEG course <sup>1</sup>		9
<del>Six hours of any 4000, 5000 or 6000 level technical electives<sup>3</sup></del>		<del>6</del>
<u>CHEG 5801</u>	<u>Course CHEG 5801 Not Found</u> (this should be taken every semester)	
<del>Assisting in departmental teaching is required.</del>		
<u>Five hours of any 4000, 5000 or 6000 level technical electives<sup>2</sup></u>		<u>5</u>
<u>CHEG 58001</u>	<u>Graduate Seminar</u>	<u>1</u>
Total Hours		30

<sup>1</sup> Not to exceed 3 hours of 4000 level credit. These electives must be lecture courses, not a special project, seminar or independent research topic.

<sup>2</sup> Not to exceed 3 hours of 4000 level credit. These electives must be lecture courses, not a special project, seminar or independent research topic.

~~<sup>3</sup> Not to exceed 3 hours of 4000 level credit. These electives must be lecture courses, not a special project, seminar or independent research topic.~~

Students should also be aware of Graduate School requirements with regard to master's degrees.

**Requirements for the thesis M.S. Degree:** At least 24 hours of course work and six hours of thesis as follows:

<u>MATH 4423</u>	<u>Course MATH 4423 Not Found</u> <sup>1</sup>	<u>3</u>
<u>CHEG 5113</u>	<u>Course CHEG 5113 Not Found</u>	<u>3</u>
<u>CHEG 5133</u>	<u>Course CHEG 5133 Not Found</u>	<u>3</u>

<u>CHEG 5333</u>	<u>Course CHEG 5333 Not Found</u>	<u>3</u>
<u>CHEG 6123</u>	<u>Course CHEG 6123 Not Found</u>	<u>3</u>
<u>MATH 54203</u>	<u>Introduction to Partial Differential Equations</u>	<u>3</u>
<u>CHEG 51103</u>	<u>Transport Processes I</u>	<u>3</u>
<u>CHEG 51303</u>	<u>Advanced Reactor Design</u>	<u>3</u>
<u>CHEG 53303</u>	<u>Advanced Thermodynamics</u>	<u>3</u>
<u>CHEG 61203</u>	<u>Transport Processes II</u>	<u>3</u>
Three hours of a 4000 or 5000 level CHEG course <sup>1</sup>		3
Six hours of any 4000, 5000 or 6000 level technical electives <sup>3</sup>		6
<u>CHEG 600V</u>	<u>Course CHEG 600V Not Found</u>	6
<u>CHEG 5801</u>	<u>Course CHEG 5801 Not Found</u> (this should be taken every semester)	
<u>Five hours of any 4000, 5000 or 6000 level technical electives <sup>2</sup></u>		<u>5</u>
<u>CHEG 6000V</u>	<u>Master's Thesis</u>	<u>6</u>
Research resulting in a successfully defended thesis and assisting in departmental teaching are required.		
<u>CHEG 58001</u>	<u>Graduate Seminar</u>	<u>1</u>
Total Hours		30

<sup>1</sup> Not to exceed 3 hours of 4000 level credit. These electives must be lecture courses, not a special project, seminar or independent research topic.

<sup>2</sup> Not to exceed 3 hours of 4000 level credit. These electives must be lecture courses, not a special project, seminar or independent research topic.

<sup>3</sup> ~~These electives must be lecture courses, not a special project, seminar or independent research topic.~~

Students should also be aware of Graduate School requirements with regard to [master's degrees](#).

### Accelerated M.S. in Chemical Engineering Degree

High-achieving current undergraduate students seeking a B.S.Ch.E. degree at the University of Arkansas who choose to pursue graduate studies in Chemical Engineering may participate in the accelerated M.S.Ch.E. program. Eligible students may take up to 12 credit hours of 5000-level courses as CHEG or technical electives for their bachelor's degree and those hours will also count towards their M.S.Ch.E. degree. The total of 12 credit hours of graduate courses taken as an undergraduate student must be taken during the final 18 month period of their undergraduate degree.

Once fully admitted to the M.S.Ch.E. program, student will request that up to 12 hours of 5000-level or above courses taken in the final 18-month period period of their undergraduate degree count towards their graduate degree, if these courses were taken on the Fayetteville campus of the University of Arkansas. Students then take an additional 18 hours of approved graduate-level courses (including CHEG 6000V Master's Thesis if required) in order

to complete their M.S.Ch.E. degree as per their intended M.S.Ch.E. program (i.e. Thesis option or Non-thesis option).

Chemical engineering undergraduate students interested in the accelerated M.S.Ch.E degree should apply to the program in the junior year (according to the four year course plan) of their undergraduate program. To be eligible, students must have a 3.5 cumulative GPA or higher and submit the normal application materials required by the Graduate School for the M.S.Ch.E. degree program.

Students should also be aware of Graduate School requirements with regard to master's degrees.

Are Similar Programs available in the area?

No

Estimated Student 10

Demand for Program

Scheduled Program 2029-2030 ~~2022-~~

Review Date ~~2023~~

Program Goals and Objectives

#### Program Goals and Objectives

The educational objective of the Chemical Engineering graduate program is to prepare students for advanced roles in the profession through a combination of planned coursework and research activities so that graduates are equipped to address present and future challenges in such areas as research, teaching, management, and entrepreneurship.

Learning Outcomes

#### Learning Outcomes

The educational outcomes of our graduate program are to assure that each student has had

an opportunity to:

- a. Critically analyze meaningful and technologically relevant data, and for thesis students, plan and safely conduct research;
- b. Demonstrate proficiency in fundamental mathematics and chemical engineering problem solving;
- c. Understand professional and ethical responsibility; and
- d. Develop and use effective written and oral communication skills.

Description and justification of the request

Description of specific change	Justification for this change
Admission requirements were removed.	Admission requirements are in line with the graduate school's so this was unnecessary

Description of specific change	Justification for this change
<p>Zero hour seminar course was changed back to original 1 hour course (CHEG 5801).</p> <p>Technical elective hours requirements were decreased by 1 hour.</p> <p>Accelerated 4+1 MS was added.</p>	<p>wording what might need to be continually updated as the graduate school updated requirements.</p> <p>Zero hour seminar course was not approved so returned to the original 1 hour seminar course.</p> <p>Technical electives were decreased by 1 hour to account for adding back an hour of seminar.</p> <p>There is significant undergraduate interest in a 4+1 MS and most of the other programs in COE also offer accelerated 4+1 MS.</p>

Upload attachments

Reviewer Comments

**Norman Dennis (ndennis) (01/26/18 8:34 pm):** Rollback: per your request

**Alice Griffin (agriffin) (02/06/18 1:03 pm):** Rollback: Please address the discrepancy between total hours needed (30 is noted) and the program requirements that are listed which total 31. However, please also address the number of times (and credit hours) CHEG 5801 should be taken.

**Norman Dennis (ndennis) (02/19/18 9:51 am):** Rollback: The issue with CHEG 5801 has not been resolved. See Alice Griffin's comment.

**Norman Dennis (ndennis) (03/13/18 12:27 pm):** Rollback: If you want this program proposal to go through you will have to submit a course change proposal for CHEG 5801. It is currently listed as a one hour course. You will have to change it to a zero credit hour course CHEG 5800, perhaps.

**Norman Dennis (ndennis) (06/10/21 10:23 am):** Rollback: please submit a course change for CHEG 5801, changing it to 5800. Then resubmit this program change with the new CHEG 5800 instead of CHEG 5801.

**Norman Dennis (ndennis) (06/14/21 3:09 pm):** Removed 5800 and added 5810 for zero credit hour seminar. CHEG 5810 is in workflow.

**Alice Griffin (agriffin) (06/16/21 2:42 pm):** Changed footnotes in program requirements to match footnote numbers with permission from the submitter.

**Alice Griffin (agriffin) (06/16/21 2:44 pm):** As noted above, CHEG 5810 is currently in the approval workflow.

**Alice Griffin (agriffin) (06/16/21 2:45 pm):** ATTENTION: This minor program change qualifies for the shortened approval workflow.

**Lisa Kulczak (lkulcza) (07/02/21 11:53 am):** Rollback: Rolling back per Senior Vice Provost's direction; zero credit hour courses will no longer be approved. The department is encouraged

to contact Terry Martin if there are additional questions.

**Kevin Hall (kdhall) (05/02/22 8:55 am):** Rollback: With the reinstatement of CHEG 5801, we are back to the original issue of listing 31 required hours, but stating that the degree is "at least 30 hours". As noted in the comments dating back to 2018, this discrepancy must be fixed. In addition, footnote (2) on the thesis option degree does not carry the instruction that the selection of technical electives is limited to 3 hours at the 4000-level (as is stated in the coursework-only option). Is it your intention to allow more 4000-level courses in the thesis-option than in the coursework-option? If not, please address.

**Jim Gigantino (jgiganti) (07/05/22 9:19 am):** Rollback: Christa---we haven't typically allowed a program to refer to specific requirements for admission in their graduate handbook. I would instead encourage you to set out some basic requirements in the catalog "earned bachelor's degree with at least a 3.0 in last 60 hours, GRE score, and, if international, meeting the Graduate School's English Language Proficiency Requirement. The actual implementation of the stated admissions policy could then be referred to the Graduate Handbook.

**Lisa Kulczak (lkulcza) (08/21/23 6:52 pm):** Adjusted effective date from fall 2023 to fall 2024; updated next program review date. Attention Registrar: Please remove Undergraduate Council from the workflow.

**Gina Daugherty (gdaugher) (08/22/23 7:22 am):** Undergraduate Council removed from workflow.

**Gina Daugherty (gdaugher) (04/03/24 7:49 am):** Rollback: Rolled back at request of Keisha Walters, CHEG Chair.

**Lisa Kulczak (lkulcza) (08/26/24 5:35 pm):** Adjusted effective date from fall 2024 to fall 2025. ATTENTION REGISTRAR: Please remove Undergraduate Council from the workflow.

**Gina Daugherty (gdaugher) (08/27/24 7:32 am):** Undergraduate Council removed from workflow.