

Handbook for Chemical Engineering Students at Youngstown State University

Updated August 2, 2003

Dynamic Column with Control Systems

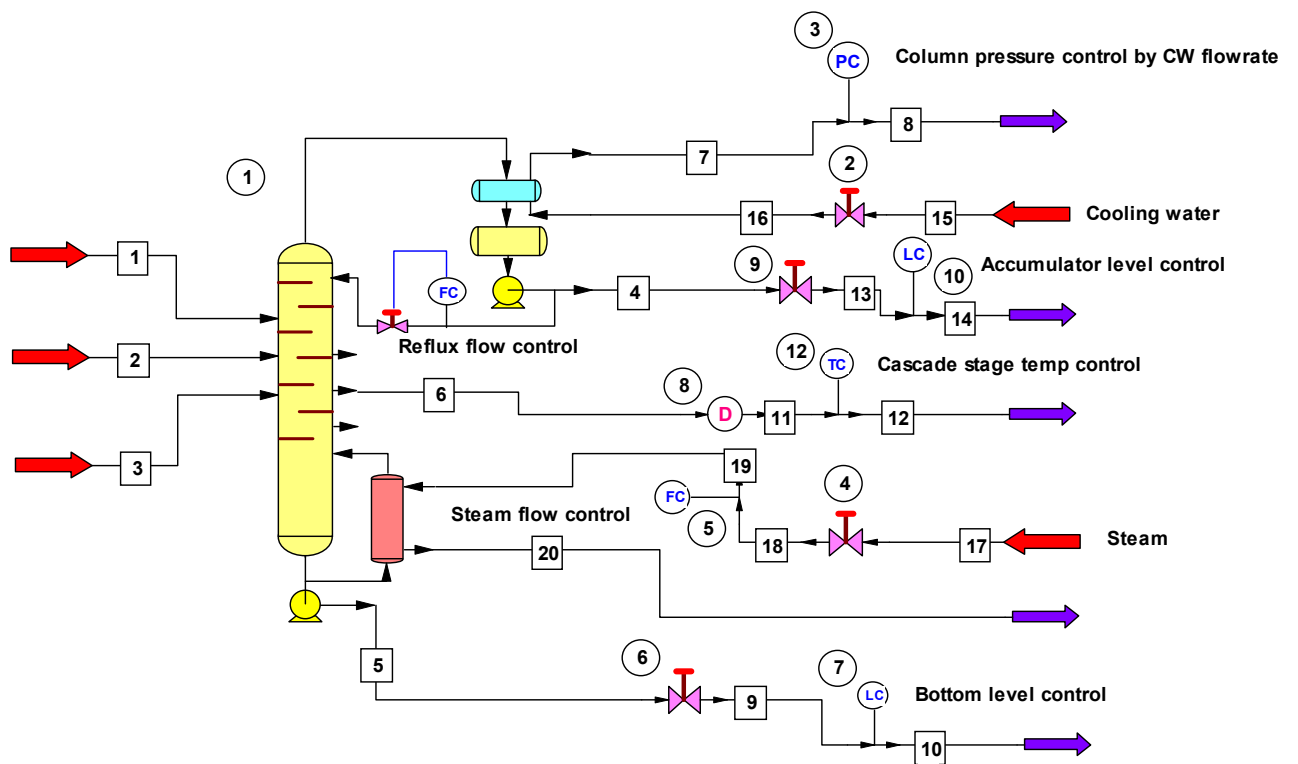


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CHEMICAL ENGINEERING MISSION STATEMENT

The mission of the Chemical Engineering Program at Youngstown State University is to provide a superior program in undergraduate chemical engineering education by maintaining ABET (Accreditation Board for Engineering and Technology) standards for accreditation, as well as to prepare chemical engineering students to adapt to global and domestic competitive challenges, to provide increased support to local industries, and to improve research efforts. This program mission promotes the mission of the University stated as:

University Mission Statement

Youngstown State University provides open access to high-quality education through a broad range of affordable certificate, associate, baccalaureate, and graduate programs.

The University is dedicated to

- *outstanding teaching, scholarship, and service and to forging connections among three interactive components of its mission;*
- *fostering student faculty relationships that enrich teaching and learning, develop scholarship, and encourage public service;*
- *promoting diversity and an understanding of global perspectives;*
- *advancing the intellectual, cultural, and economic life of the state and region.*

The mission of the Chemical Engineering Program can be achieved by fulfilling these key strategies:

- (1) Offering a wide variety of electives to students according to the global trend in chemical engineering technology.
- (2) Increasing computer usage by students and faculty.
- (3) Providing real world experiences to students through laboratory experiments.
- (4) Conducting research with faculty in the areas commonly associated with traditional chemical engineering disciplines and their impact on the local and global environment.
- (5) Participating in interdisciplinary programs.

PROGRAM EDUCATIONAL OBJECTIVES

The educational objectives listed below outlines the expectations of graduates during the first few years after graduation.

- Graduates are adequately prepared to succeed in chemical process engineering positions in all industries that employ chemical engineers.
- Graduates are adequately prepared to excel in graduate study in all chemical engineering programs.

- Graduates have a strong foundation in chemistry, math, computer applications, and physics and can readily apply these skills to chemical engineering problem solving.
- Graduates have a strong foundation in molecular thermodynamics, reaction engineering, transport phenomena, process control, and plant design and can apply this knowledge to assess the techno-economic feasibility of new and novel processes.
- Graduates understand and respect chemical substances and processes of significant danger to health and the environment, and are able to incorporate adequate safeguards in process design and procedures.
- Graduates are able to make order of magnitude estimates of the outcomes of given processes and the effects of changes in process variables.
- Graduates can give professional quality presentations and are exemplary in their oral and written communications.

PROGRAM OUTCOMES

The following Program Outcomes has been devised in order to attain the above objectives:

- Understand all of the basic principles traditionally applied by chemical engineers special to the program, over and beyond natural science and math
- Understand how to apply math and basic sciences in solving chemical engineering problems
- Apply chemical engineering principles both in upper division classes and in the professional work arena, and know how to approach an open-ended and design problems
- Use traditional chemical engineering software and general engineering software in addition to standard packages for graphing, tables, and word processing; basic programming skills
- Understand the societal, global, and ethical impact of their designs and processes
- Communicate and work effectively on a one-on-one basis, in groups of chemical engineers, and on multidisciplinary teams
- Participate in student chapter activities, now and after they enter professional work, with an emphasis on lifelong learning and attending clinics and conference sessions
- Effectively access and assess information (data from literature)

ADVISEMENT AND COURSE SELECTION

The Chemical Engineering Program requires 138 semester hours of prescribed courses in order to obtain a Bachelor of Engineering degree in Chemical Engineering. This high number of credit hours is due to our program meeting the requirements of the American Institute of Chemical Engineers (AIChE), the Accreditation Board of Engineering and Technology (ABET), and the Youngstown State University General Education Requirements. In order to graduate in four

years of study, it is crucial to stay on track with these courses. **Please seek advisement from one of the Chemical Engineering Faculty prior to registering or taking courses. Do not rely on other students for advisement.**

The courses needed for graduation are listed on the Chemical Engineering Program Curriculum Sheet in Appendix A-1 and should be used as a guide for planning your courses. The sequence of the courses in the curriculum sheet for mathematics, chemistry, physics, and chemical engineering is designed to give the student the necessary skills to proceed to more advanced courses. Also, course schedules are designed so that courses with laboratories will not conflict with each other. This will only work if the curriculum sheet is followed. Failing to do this will most likely result in the student needing to take two courses that meet at the same time, which unfortunately happens and is difficult or impossible to resolve. Under these circumstances, students may have to opt for taking courses in the summer or attend at least one more semester before graduation. Meeting with your advisor prior to registering is the best way to prevent this from occurring.

The Chemical Engineering Program requires students to meet the Triple “C” rule prior to enrolling in CHEGR 4887 (*Process and Plant Design I*). This rule states that:

- 1 Overall recalculated GPA must be 2.0 or better
- 2 Unrecalculated GPA in all engineering courses
- 3 Unrecalculated GPA in all Chemical Engineering courses.

Failure to meet the Triple “C” rule will result in denied enrollment in CHEGR 4887. Students who attempt to register for this course will be administratively withdrawn until all three requirements are met. Should a student be denied permission to enroll in this controlled course due to an unacceptable academic record, continued enrollment in the program may be possible by repeating courses or, in a few instances, by enrollment in CHEGR elective courses.

MINIMUM GRADE REQUIREMENTS FOR THE B.E. DEGREE

An overall grade point average (GPA) in all coursework of 2.0 (C average), and passing grades of D or better in all required and elective courses counted for the degree, are required for graduation. In addition, the student must maintain an unrecalculated GPA of 2.0 or better in all Chemical Engineering (CHEGR) classes counted toward his or her major, and in all engineering classes combined. The unrecalculated GPA is computed by including grades received in all courses, including those that were later repeated.

It should be noted that, prior to admission to a professional program (e.g., Chemical Engineering), a student who earns two unsatisfactory grades (D, F, NC) in any required course will be disqualified from further registration in Engineering courses, except by permission of the Dean of Engineering and Technology. Likewise, a student who interrupts his/her enrollment in the Chemical Engineering program will be subject to this rule, even though previously admitted to Chemical Engineering.

ELECTIVES SECTION

¹General Education Requirements (GER): The program has two components: Knowledge and Basic Skills. Under the Basic Skills component, the student must take ENGL 1550 and ENGL 1551 (*Writing 1 and 2*) or their Honors counterpart, COMM 1545 or 1545H (*Communication Theory and Practice*) and one approved mathematics course (such as MATH 1571, *Calculus 1*).

Under the Knowledge Domain, students must take eight courses in the Natural Science (NS), Artistic and Literary Perspectives (AL), and Societies and Institutions (SI). Students must also take two courses in Personal and Social Responsibility (PS), one course in Selected Topics and Electives and one Capstone course. CHEM 1515, CHEM 1516, and PHYS 2610 satisfy the NS requirement. PHYS 2611 will satisfy the Selected Topics requirements. CHEGR 4888 will satisfy the Capstone requirements. Students must either take two courses in AL and three in SI or three courses in AL in two in SI. The student must take two courses in PS, one of which must be an ethics course (PHIL 2625 or PHIL 3727). See the list of qualifying courses that satisfy the Basic and Knowledge Skills domains.

²Advanced Math Elective: The student must take three semester hours of advanced mathematics. Courses that satisfy the requirements are:

MATH 3715 *Discrete Mathematics*
MATH 3720 *Linear Algebra and Matrix Theory*
STAT 3743 *Probability and Statistics*
ISEGR 3710 *Engineering Statistics*
CHEGR 5883 *Mathematical Methods in Chemical Engineering*

NOTE: If CHEGR 5883 is used as an Advanced Math Elective, it cannot be counted as a Chemical Engineering Elective.

³Chemical Engineering Elective: The Chemical Engineering Program typically offers three electives each year in which juniors and seniors can enroll, along with research projects. The student must take three electives to meet graduation requirements. One three-semester-hour upper-level natural science course may be substituted for one of these electives **only with prior written approval by a Chemical Engineering academic advisor**. Three semester hours of chemical engineering research can qualify as an elective if a thesis is written and approved. To conduct research for credit, the student must have an unrecalculated GPA of 3.0 or better in chemical engineering and approval from a chemical engineering faculty member who will oversee the project. If there are fewer projects available than there are students interested in conducting research, the faculty will rank those students based on the students' academic performance, work ethic, and course load.

GRADUATION PROCESSES AND PAPERWORK

In order to certify a chemical engineering student for graduation (i.e., to ensure that he or she has met all the degree requirements), a "Certification of Graduation" form (also known as a Senior

Sheet) must be completed and signed by both the student's advisor and the department chairperson. A copy of the form is presented in Appendix A-2. Additional copies are available in the department office. The student is encouraged to continually update this document as he or she progresses through the program. An updated sheet is also maintained in the student's file, which is housed in the department office.

A formal application for graduation must be filed at the Bursar's Office before 5:00 p.m. on the Friday following the first complete week of the semester in which the student intends to graduate (please check the Schedule of Classes for that quarter for the exact date). This form (GRADUATION APPLICATION) may be secured in the Department Office, the Engineering Dean's Office, or the Office of the Registrar. If the student does not graduate at the commencement exercise for which the formal application has been filed, the application must be reactivated. In order to ensure that a student is "on track" to graduate, he or she should file the PLAN OF COURSES FOR GRADUATION form with the department after the completion of 100 semester hours toward the degree.

COOPERATIVE EDUCATION (CO-OP)

The Chemical Engineering program offers an optional cooperative education ("co-op") experience. This option provides students with valuable work experience that supplements and enhances their academic program. Co-op students must complete all of the normal requirements for graduation from the program, in addition to the co-op assignment(s). To participate in the co-op experience, students must meet the following qualifications:

1. Successfully complete all courses required in the first two years of the Chemical Engineering program as specified in the applicable YSU Undergraduate Bulletin;
2. Maintain an overall GPA of 2.5 or above in all required coursework;
3. Maintain an unrecalculated GPA of 2.0 in all engineering courses;
4. Maintain an unrecalculated GPA of 2.0 in all major (CHEGR) courses; and
5. Obtain approval of the Department Chair and Engineering Co-op Coordinator.

In order to pursue a co-op assignment, the student will first work with the University's Coordinator of Professional Practice ([Click for website](#)) to identify an appropriate employment opportunity. Assistance will be provided in developing student resumes and arranging interviews with prospective employers. The employer retains the right to interview, evaluate, and select prospective cooperative education students. Students have also used Research Experiences for Undergraduates (REU) as a means of CO-OP employment. Universities that offered opportunities in the REU program are listed in Table C – 1. The student and the employer negotiate salary, working conditions and fringe benefits. Once an opportunity is located, both the employer and the student sign a Co-op Agreement, with approval by the Department Chair. The student then registers for either ENGR 3798 (first assignment) or ENGR 4898 (subsequent assignments), and obtains a copy of the course syllabus from the Department Chair. To successfully complete the co-op assignment, Chemical Engineering students must:

1. Work a minimum of 300 hours;

2. Maintain a log book to record the number of hours worked each week and a brief description of their work responsibilities;
3. Submit a 3-5 page summary (typed, double-spaced) of the work experience to the Department Chair before the end of the semester; and
4. Complete the Student Co-op Evaluation Form and return it to the Coordinator of Professional Practice.

Since CHEGR courses are only offered once per year, it is generally not possible for students to pursue a traditional alternating co-op experience without significantly lengthening the time required for completion of the program. Rather, students will normally find that one of the following options permits more efficient coordination of co-op experience(s) with the academic program:

1. Pursue full-time or part-time co-op employment during summers;
2. Pursue part-time co-op employment concurrently with full-time or part-time enrollment in courses during the academic year; or
3. Pursue full-time co-op employment for an entire academic year, then return to full-time academic enrollment the next year.

At the end of each work period, the employer using the Employer Co-op Evaluation Form will evaluate the student. The Department Chair will also evaluate the student's work based on the logbook and summary paper submitted, and notify the Engineering Co-op Coordinator of the letter grade to be awarded for ENGR 3798 or 4898.

CREDIT BY EXAMINATION

When a student has prior successful academic or practical experience in a subject area corresponding to a course in the curriculum, he or she may seek Credit by Examination. This opportunity is only available to a student who can demonstrate ability and knowledge in a particular subject area, and thus earn credit in a course without enrolling in it.

The student initiates an APPLICATION FOR CREDIT BY EXAMINATION form, which requires approval by his or her advisor or Dean, the chairperson, and Dean of the school/college where the course is offered. If these approvals are granted, the student pays a fee (\$15 per credit hour) at the Bursar's Office and presents a copy of the receipt at the office of the examining department. The chairperson arranges for the examination, records the outcome on the form as "credit recommended" or "credit not recommended," and submits it to the Records Office. If successful, the name of the course is entered on the student's transcript with a grade of CR. The result of the examination does not affect the student's grade point average.

Credit by examination may be earned in some undergraduate chemical engineering courses, but only in an academic semester in which the course is offered and held. It is recommended that a student contemplating a request for credit by examination discuss the matter with the instructor(s) scheduled to teach the course before proceeding. At the discretion of the instructor(s), the student will be expected to successfully complete one or more of the following:

- (a) a specially prepared examination given at a time agreed to by the student and the instructor(s),
- (b) the final examination for the course given during the final exam week,
- (c) an independent project designed to demonstrate proficiency in the course work with a time limit for completion.

To allow sufficient time for the instructor(s) to prepare, administer, and grade an examination or project, the student should seek to complete the APPLICATION FOR CREDIT BY EXAMINATION, including fee payment, by no later than the end of the fourth week of the academic semester.

ENROLLMENT IN COURSES ON A CREDIT/NO CREDIT BASIS

To encourage students to explore subjects outside of their major field of concentration, a credit/no credit policy exists with certain guidelines. Youngstown State University students who have completed at least four courses and have a grade point average of 2.0 or better, or transfer students admitted unconditionally who have at least 15 semester hours of transfer credit, may elect to take a course for credit (CR) or no credit (NC). This option may be elected for a maximum of six courses for the baccalaureate degree or three courses for the associate degree, but not more than one course a semester (including summer quarter).

Since the intent of this option is to encourage students to experiment in areas they would otherwise be reluctant to try, only elective courses and not required courses (i.e., specific courses as listed in the recommended curricula sheets in Appendix A) are available for Chemical Engineering students on this enrollment basis. Courses taken under the CR/NC option may not be counted toward a student's major or minor. Chemical Engineering students may take only elective courses (such as the General Education Knowledge domain courses) on a CR/NC basis. Students should confer with their advisors prior to electing the CR/NC option.

Students must indicate their selection of the CR/NC option at the time of registration or within the time limits established for adding classes. The CR/NC option will not be converted to the standard grading system beyond the last day to add a class. Students opting for the CR/NC option will not be identified as such on the class roster. If the student earns a grade of A, B, or C in the course, a grade of CR is recorded. Otherwise, a grade of NC is recorded. The student's GPA is not affected.

REPETITION OF COURSES

A student may repeat a course once, unless otherwise specified in the course description, or unless the Dean of Engineering and Technology authorizes an additional repetition. If the course is a prerequisite to another course, the repetition must be successfully completed before the subsequent course is taken. A course may not be repeated once the student has received credit for a more advanced course in the same subject. A current undergraduate student may wish to improve his/her cumulative GPA by repeating a course in which a grade of D or F was earned. In order to

recalculate the cumulative point average, the repetition must be consistent with the policy on Repetition of Courses and the student must initiate the recalculation process. The grade earned in the repeated course will be used for all purposes including calculation of cumulative GPA, except where recalculation is specifically prohibited. Although courses are not deleted from the permanent record, the record is adjusted to reflect the inclusion of only the last grade in the computation of the point average. The hours credited toward the degree are those earned with the last grade. Only undergraduate students currently enrolled in the University may request recalculation. A post-baccalaureate student is not eligible to petition grades subsequent to conferral of the degree. All YSU grades will be counted in determining honors for graduation.

No student may receive credit for a course that is a prerequisite for a more advanced course which the student has already successfully completed, unless an exception to this policy is recommended by the appropriate chairpersons (major and subject matter) and approved in writing by the Dean of Engineering and Technology. Should this policy be violated, the prerequisite course cannot be counted toward the degree requirements.

GOOD STANDING, WARNING, PROBATION, AND SUSPENSION

The University has established four categories of academic standing: good standing, warning, probation, and suspension. “Warning” and “Probation” indicate that grade standards consistent with graduation requirements are not being met. “Suspension” means an unspecified period of separation from the University to permit maturation in judgment and responsibility on the part of a student, which should improve the student's capacity for academic achievement.

Recognizing that the transition from high school to college may be a difficult one, the University has set the minimum levels of academic achievement during the student's first year somewhat below what will be required in order to graduate. The point averages required for Good Standing are as follows:

Credit Hours	GPA
1-31	1.75
32+	2.00

A student who falls below the specified GPA for the number of hours passed (including transfer hours accepted) will be placed on Warning. If by the end of the following semester, the student has failed to bring the average up to the minimum, the student will be put on Probation. If at the end of the probationary semester the student has failed to bring the average up to the minimum, the student will be suspended; however, if the student makes substantial improvement during a probationary semester and averages at least 2.0 for this semester, the student will be continued on probation even though the student's cumulative GPA does not reach the minimum.

PROFESSIONAL SOCIETIES

Chemical engineering students are strongly encouraged to enhance their educational experience at YSU by participating in the activities of one of the following student engineering societies:

American Institute of Chemical Engineers (AIChE): [AIChE Website](#)

The YSU Student Chapter of AIChE sponsors field trips, social gatherings, seminars, conferences, engineering competitions, etc. The organization has participated in regional student chapter conferences, and the National Student Design competitions. Students in good academic standing are encouraged to become members of both the national AIChE (\$10) and the YSU Student Chapter (\$10 per year).

Society of Women Engineers (SWE): [SWE website](#)

Engineering has changed dramatically since 1980, when it was a predominately male profession. Now, nearly 50% of undergraduate degrees in chemical engineering are awarded to women. In recognition of the key role women now play in the engineering profession, YSU established a SWE student group in 2000. Membership is open to all male or female students in good academic standing in any engineering discipline.

Order of the Engineer: [Order of the Engineer Website](#)

Engineering students are encouraged to join the Order of the Engineer to demonstrate their commitment to upholding the highest professional and ethical standards in the practice of engineering. To do so, students participate in a ring ceremony held each spring in the College of Engineering and Technology.

HONORARY SOCIETIES

Outstanding chemical engineering students may be invited to join campus chapters of the following honorary societies:

- Tau Beta Pi - National engineering honorary society [Tau Beta Pi Website](#)
- Phi Kappa Phi - Honorary society for all disciplines [Phi Kappa Phi Website](#)

FACULTY AND STAFF

<p>Dr. Cynthia Hirtzel, Professor and Dean of Engineering and Technology B.S. Mathematics Washington University, 1973 M.S. Civil/Envir. Eng. Northwestern University, 1977 Ph.D. Civil/Envir. Eng. Northwestern University, 1980</p>	<p>2200 Moser Hall (330) 941-3009 cshirtzel@ysu.edu</p>
<p>Dr. Soon-Sik Lim, Professor B.S. Chemical Engineering Yonsei University (Seoul, Korea) 1971 M.S. Chemical Engineering Wayne State University, 1975 Ph.D. Chemical Engineering Wayne State University, 1981</p>	<p>2064 Moser Hall (330) 941-3022 slim@ysu.edu</p>
<p>Dr. Jeanette M. Garr, Associate Professor B.A. Biology State Univ. of New York at Buffalo, 1978 M.S. Biochemistry State Univ. of New York at Buffalo, 1986 Ph.D. Chemical Engineering State Univ. of New York at Buffalo, 1989</p>	<p>2067 Moser Hall (330) 941-1737 jmgarr@ysu.edu</p>
<p>Dr. Douglas M. Price, Assistant Professor and Program Coordinator B.S. Chemical Engineering Penn State University, 1984 M.S. Chemical Engineering University of Notre Dame, 1986 Ph.D. Chemical Engineering University of Notre Dame, 1988</p>	<p>2068 Moser Hall (330) 941-3019 dmprice@ysu.edu</p>
<p>Dr. Sundar Vaidyaraman, Instructor B.S. Chemical Engineering Anna University (India), 1990 M.S. Chemical Engineering Georgia Institute of Technology, 1992 Ph.D. Chemical Engineering Georgia Institute of Technology, 1995</p>	<p>2070 Moser Hall (330) 941-7455 sundar_akron@yahoo.com</p>
<p>Ms. Linda J. Adovasio, Department Secretary</p>	<p>2460 Moser Hall (330) 941-3027 ljadovasio@ysu.edu</p>

SOURCES OF FINANCIAL AID AT YOUNGSTOWN STATE UNIVERSITY

This section contains hyperlinks to Youngstown State University's website. To access these hyperlinks, you will need to be connected to the Internet.

Financial aid is awarded in four basic forms: scholarships, grants, loans, and employment. Scholarships and grants are gift aid and do not require repayment. Loans require repayment.

- [Scholarships and Private-Donors Programs](#)
- [Grants and Loans](#)
- [University-Sponsored Programs](#)



[Financial Aid and Scholarships](#)

A – 1: CHEMICAL ENGINEERING PROGRAM CURRICULUM SHEET

First Year Fall Semester	SH	Semester Taken
CHEM 1515	4	
CHEM 1515L	0	
MATH 1571	4	
ENGR 1550	3	
ENGL 1550	3	
COMM 1545	3	

First Year Spring Semester	SH	Semester Taken
CHEM 1516	4	
CHEM 1516L	0	
MATH 1572	4	
ENGR 1560	3	
ENGL 1551	3	
GER Elective ¹	3	

Second Year Fall Semester	SH	Semester Taken
CHEM 3719	4	
CHEM 3719L	0	
PHYS 2610	4	
MATH 2673	4	
CHEGR 2683	3	
GER Elective ¹	3	

Second Year Spring Semester	SH	Semester Taken
CHEM 3720	4	
CHEM 3720L	0	
PHYS 2611	4	
MATH 3705	3	
CHEGR 2684	3	
CHEGR 2630	1	

Third Year Fall Semester	SH	Semester Taken
CHEM 3739	4	
CHEM 3739L	0	
CHEGR 3771	3	
CHEGR 3786	3	
CHEGR 3785L	1	
Adv. Math Elect. ²	3	
GER Elective ¹	3	

Third Year Spring Semester	SH	Semester Taken
CHEM 3740	4	
CHEM 3740L	0	
CHEGR 2631	1	
CHEGR 3772	3	
CHEGR 3786L	1	
CHEGR 3787	3	
CHEGR Elective ³	3	
GER Elective ¹	3	

Fourth Year Fall Semester	SH	Semester Taken
CHEGR 3787L	1	
CHEGR 4815	3	
CHEGR 4880	3	
CHEGR 4882	3	
CHEGR 4887	3	
CHEGR Elective ³	3	
GER Elective ¹	3	

Fourth Year Spring Semester	SH	Semester Taken
CHEGR 4815L	1	
CHEGR 4881	3	
CHEGR 4882L	1	
CHEGR 4888	3	
CHEGR Elective ³	3	
GER Elective ¹	3	
GER Elective ¹	3	

^{1,2,3}See Electives Section for courses that qualify under this designation.

**A – 2: CERTIFICATION OF GRADUATION: BACHELOR OF ENGINEERING
CHEMICAL ENGINEERING PROGRAM**

Bulletin/Catalog Year 2002-03

Student:

SS No.:

Requirements Completed:

Dept.	Catalog Number	ES ED*	SH	Grade	Dept.	Catalog Number	ES ED*	SH	Grade	Dept.	Catalog Number	ES ED*	SH	Grade
MAJOR: CHEMICAL ENGR. (55 SH)					CHEMISTRY (24 SH)					PHYSICS (8 SH)				
CHEGR	2630	S	1		CHEM	1515/L		4		PHYS	2610		4	
CHEGR	2631	S	1		CHEM	1516/L		4		PHYS	2611		4	
CHEGR	2683	S	3		CHEM	3719/L		4						
CHEGR	2684	S/D	3		CHEM	3720/L		4						
CHEGR	3771	S/D	3		CHEM	3739/L		4						
CHEGR	3772	S/D	3		CHEM	3740/L		4						
CHEGR	3785L	S	1							GENERAL EDUCATION (21 SH)				
CHEGR	3786	S	3		MATHEMATICS (15 SH)					Pers. & Soc. Resp. (6 SH):***				
CHEGR	3786L	S	1		MATH	1571		4					3	
CHEGR	3787	S/D	3		MATH	1572		4						
CHEGR	3787L	S	1		MATH	2673		4		Soc. & Inst. (6 or 9 SH):				
CHEGR	4815	S/D	3		MATH	3705		3						
CHEGR	4815L	S	1											
CHEGR	4880	S/D	3											
CHEGR	4881	S/D	3		COMMUNICATION (9 SH)					Art. & Lit. Persp. (6 or 9 SH):				
CHEGR	4882	S/D	3		ENGL	1550		3						
CHEGR	4882L	S	1		ENGL	1551		3						
CHEGR	4887	S/D	3		COMMST	1545		3						
CHEGR	4888	S/D	3											
CHEGR		S/D	3		EXTRA COURSES					REQUIREMENT SUMMARY				
CHEGR		S/D	3							Mathematics		15		
CHEGR		S/D	3							Basic Science		32		
CHEGR**		S	3							Engineering Topics		61		
										Gen. Ed. & Comm.		30		
										CHEGR Unrecalc. GPA				
										Engineering Unrecalc. GPA				
OUT-OF-DEPT. ENGR. (6 SH)					GRADUATION CERTIFICATION					GRADUATION REQUIREMENTS				
ENGR	1550	S	3							Transfer SH Credits				
ENGR	1560	S	3							YSU SH Passed				
										Combined Credits SH				
										Required for the Degree		138.00		
										YSU SH Attempted				
					Advisor				Date	YSU Quality Points				
										Final GPA				
					Chair				Date					

* S = Engineering Science

D = Engineering Design

S/D = Engineering Science & Design

** Adv. Math Elective – See advisor for appropriate courses

*** One course from this domain must be an ethics course. See advisor for list of courses.

B – 1: GENERAL EDUCATION CURRICULUM

REPORT TO ACADEMIC DEPARTMENTS April 26, 2002

From the General Education Committee: The General Education Committee has certified the following courses. They have passed the objection stage and have been posted in the Senate agenda.

BASIC SKILLS

-Mathematics-

990027 **MATH 2623:** *Survey of Mathematics*

Description: Mathematics models emphasizing basic ideas in mathematics and descriptive statistics, stressing concept formation rather than manipulative skills. Prereq.: At least Level 3 on the Mathematics Placement Test or MATH 1501. 3 SH

The following courses are substitutes for the Survey of Mathematics: 1549 (College Business Mathematics 2); 1570 (Applied Calculus II); 1571 (Calculus I); 1572 (Calculus II); 1581H (Biomathematics 2); 1585H (Calculus Honors); 2652 (Mathematics for Early Childhood Teachers 2); 2665 (Foundations of Middle School Mathematics 2).

-Oral Communication-

990001 **COMM 1545H:** *Honors Communication Theory and Practice*

Description: The study of the theories, strategies, and skills for competent participation in interpersonal, group, and public communication situations. Application exercises in interpersonal, group, and public communication situations are included. Stylistic experimentation is encouraged so students develop their own distinctive oral communication style. Prereq.: eligibility for the Honors Program. 3 SH

990002 **COMM 1545:** *Communication Theory and Practice*

Description: The study of the theories, strategies, and skills for competent participation in interpersonal, group, and public communication situations. Application exercises in interpersonal, group, and public communication situations are included. 3 SH

-Writing I, II-

990040 **ENGL 1550:** *Writing I*

Description: Strategies for writing as a means of critical inquiry, with a focus on processes and on the roles of writer, audience and purpose as they affect writing. Students divide their time between regular classrooms and computer classrooms, where they are given the opportunity to acquire and develop basic word processing and electronic skills. Open to students on the basis of the Composition and Reading Placement Test results. Grading for English 1550 is ABC/NC. 3 SH

990042 **ENGL 1551: *Writing 2***

Description: Practice in writing with emphasis on the process of investigation: exploration of topics, formulation of tentative theses, collection of data from suitable primary and secondary sources including print and electronic media, and clear and appropriate presentation of the results of these inquiries. Students divide their time between regular classrooms and computer classrooms, where they are given the opportunity to perform research on the World Wide Web. Prereq.: English 1550. Grading for English 1551 is ABC/NC 3 SH

990041 **ENGL 1550H: *Honors Writing 1***

Description: Strategies for writing as a means of critical inquiry, with a focus on writing processes and on the roles of writer, audience and purpose as they affect writing. Writing assignments treat a broad range of ideas, especially in response to challenging readings. Stylistic experimentation is encouraged so that each student can develop a distinctive writing style. Students divide their time between regular classrooms and computer classrooms, where they are given the opportunity to acquire and develop basic word processing and electronic communication skills. Prereq.: eligibility for the Honors program and permit on the basis of the Composition and Reading Placement Test results or upon recommendation of 1550 instructor and approval of Director of Composition. Grading for English 1550H is ABC/ NC. 3 SH

990043 **ENGL 1551H: *Honors Writing 2***

Description: Research on a single topic of some depth, conducted independently and focused on a single project that results in a substantial investigative paper. Students divide their time between regular classrooms and computer classrooms, where they are given the opportunity to perform research on the World Wide Web. Prereq.: eligibility for the Honors Program and either English 1550H or 1550 and approval of the Director of Composition. Grading for English 1551H is ABC/NC. 3 SH

DOMAINS

- NATURAL SCIENCE-

990017 **A&S 2600:** *Exploration in the Sciences.*

Description: Student investigations in the natural sciences using a variety of laboratory approaches focused on a single theme or concept; a multidisciplinary study from three of the following science areas (Biology, Chemistry, physical Geography, Geology, Physics, Astronomy, Environmental Science) segmented in three five-week units (6 hr/wk including 2 to 3 hours of instruction). This course is applicable to the university science requirement. 4 SH.

990074 **ASTRO 1504:** *Descriptive Astronomy*

Description: Scientific method, introduction to modern understanding of the universe, astronomy and society, humanity's place in the universe, astronomical observing methods, the solar system, stars and star systems, galaxies, cosmology, and recent astronomical discoveries. 3 SH

990068 **BIOL 1505:** *Biology and the Modern World*

Description: Biology applied to critical issues of today's society. Focus will be placed on relevance of the scientific method to modern biological issues. Primarily for the natural science requirement. Not applicable to the biology major. 3 SH

990070 **CHEM 1500:** *Chemistry in Modern Living*

Description: A one-semester introduction to basic chemical concepts, the scientific method, and the impact of chemistry on human life and society. Examples may include water treatment, air quality, plastics, drugs, cosmetics, energy resources, food, and the other chemical basis of life. 3 SH

990058 **GEOG 1503:** *Introduction to Physical Geography*

Description: An introductory analysis of selected elements of man's natural habitat and their distributions. The course examines topography, soil, vegetative cover and hydrographic components of their natural landscape. 3 SH

990057 **GEOG 2630:** *Weather*

Description: An examination of basic weather elements, their relationships and the natural laws that govern them. Focus is on both global scale atmospheric processes and localized factors that influence weather conditions and patterns. 3 SH

990055 **GEOL 1504:** *The Dynamic Earth*

Description: A study of the various physical and chemical processes acting on and within the earth and their products. 3 SH

990076 **GEOL 1510:** *Geology of National Parks.*

Description: Geologic history of national parks; geologic processes observed in North American parks and Hawaii. Simulated field trips to several major parks. Not applicable to a geology major. 3 SH

990056 **GEOL 2602:** *Introduction to Oceanography*

Description: Survey in geological, physical, chemical, and biological oceanography; description and distribution of properties and their relationship to circulation, shorelines, ocean features, sediments, organisms, and environments. 3 SH

990073 **PHYS 1500:** *Conceptual Physics.*

Description: A conceptual treatment of selected theories and laws of classical and modern physics and their application to the understanding of natural phenomena. The evolution of these laws from hypotheses to functional relationships is examined in an historical context. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. Three hours of lecture per week. 3 SH

990136 **PHYS 2608:** *Sound.*

Description: The physical principles accounting for the production, propagation, and perception of sound waves. The relevance of these principles to phenomena ranging from hearing to the operation of various musical instruments. Introduction to auditorium acoustics. Not applicable to the major in Physics or to the combined major in Physics and Astronomy. 3 SH

A student must take A&S 2600 to satisfy the laboratory requirement if he or she is taking a regular natural science course listed above.

Substitute Courses for the Science Domain

990172 **BIOL 1545:** *Allied Health Anatomy/Physiology.*

Description: This course explores the structure and function of the human body and its organ systems. Diseases and their relationship to various physiological systems will be discussed. The study of human biology in this way adds to the student's deeper understanding of everyday life and the human condition. Prereq: high school chemistry and biology, or equivalent. Not applicable to Biological Sciences major. 5 SH

990155 **BIOL 1551:** *Anatomy & Physiology I.*

Description: This course will cover the structure, function and clinical applications of the integument, musculature, skeletal system, and nervous system. This course is targeted for students in nursing and associated health professions. Three hours lecture and two hours laboratory per week. Prereq.: High school biology and chemistry. 4 SH

990156 **BIOL 1552:** *Anatomy & Physiology II.*

Description: This course will cover the structure, function and clinical applications of the endocrine, cardiovascular, respiratory, renal, digestive and reproductive systems. This course is targeted for students in nursing and associated health professions. Three hours lecture and two hours laboratory per week. Prereq.: BIOL 1551. 4 SH

990157 **BIOL 2601:** *Principles of Biology I.*

Description: A lecture course with laboratory for students majoring in Biology or related disciplines. Topics will include the chemical and physical foundations of life, structure and function of cells and organelles, metabolism, basic molecular biology and inheritance, and principles of evolution. High school chemistry or equivalent recommended. Required of all Biological Sciences' majors. Four hours lecture and two hours laboratory a week. 5 SH

990158 **BIOL 2602:** *Principles of Biology II.*

Description: A lecture course with laboratory for students majoring in Biology or related disciplines. Topics will include ecological concepts as they relate to plant and animal diversity, structure and function of plants and animals, basic ecological concepts of populations, communities, and habitats. Required of all Biological Sciences' majors. Four hours lecture and two hours laboratory a week. Prereq.: BIOL 2601. 5 SH

990169 **CHEM 1515/1516:** *General Chemistry I, II.*

Description: The fundamental principles and the more important elements and compounds; qualitative analysis. Intended for majors in the natural sciences and engineering. Three hours lecture and three hours laboratory-discussion. Prereq.: three units of high school algebra and geometry (or MATH 1503 and MATH 1511 or their equivalents), and one unit of high school chemistry. Concurrent for 1515: CHEM 1515R unless exempted by placement examination. Concurrent for 1516: CHEM 1516R unless a grade of C or better was earned in CHEM 1515. The corresponding recitation course is required concurrently for students repeating CHEM 1515 or 1516. 4 SH + 4 SH

990170 **CHEM 1505/1506:** *Allied Health Chemistry I, II.*

Description: Fundamentals of inorganic, organic, and biological chemistry including application to the human organism. Two hours lecture and three hours laboratory-discussion. Concurrent for 1505: CHEM 1505R unless exempted by placement examination. Concurrent for 1506: CHEM 1506R unless a grade of C or better was earned in CHEM 1505. The corresponding recitation course is required concurrently for students repeating CHEM 1505 or 1506. 3 SH + 3 SH

990159 **GEOL 1513:** *Physical Evolution of North America.*

Description: Origin and evolution of the continent of North America with a focus on the geologic evidences and physical changes through geologic time within the context of plate tectonics theory. The laboratory component will emphasize geologic interpretation from a variety of geologic map types and rocks materials. Three hours of lecture and two hours of lab per week. Field trips are an integral part of the course. Prereq.: GEOL 1504 or 1505. 4 SH

990161 **GEOL 1514:** *Life of the Geologic Past.*

Description: Origin, classification, and evolution of plants, invertebrates and vertebrates through geologic time as evidence by the fossil record; contemporary understanding of the extinction of various life forms, such as the dinosaurs. Two hours of lecture and two hours of laboratory a week. 3 SH

990165 **GEOL 1505:** *Physical Geology.*

Description: A study of the various physical and chemical processes acting on and within the earth, and their products. The laboratory component will include identification of minerals and rocks, and the interpretation of topographic and geologic maps. Three hours of lecture and two hours of lab per week. 4 SH

990163 **GEOL 2611:** *Geology for Engineers.*

Description: Study of geologic principles, processes, and materials, focus on recognition of geologic factors as they apply to engineering operations and projects. Laboratory work includes examination of minerals, rocks, maps, and case histories. Two hours of lecture and two hours of laboratory a week. 3 SH

990162 **PHYS 2610+2610L / 2611 + 2611L:** *General Physics I, II.*

Description: GP I - A course in mechanics; the kinematics and dynamics of masses in translation and rotation; Newton's Laws; gravity; the conservation laws of energy and momentum, simple harmonic motion and introduction to wave motion and sound. Prereq.: High school physics or PHYS 1501; MATH 1571. 4SH + 1 SH Lab. GP II – A study of electric and magnetic fields and their effects; introduction to electric, circuits, introduction to geometrical and physical optics. Prereq.: PHYS 2610; MATH 1572. 4 SH + 1 SH Lab.

990166 **PHYS 2601, 2610L / 2602, 2611L:** *General Physics for Applied Medical Studies I, II.*

Description: GPAMS I – Description and analysis of motion including kinematics and dynamics of translation and rotation; analysis of equilibrium, energy and momentum of objects; gravity; mechanical oscillations and waves. This course is designed primarily for students enrolled in the NEOUCOM-YSU program or in pre-medical curricula. Prereq.: MATH 1507 or equivalent high school trigonometry. Prereq. Or concurrent: MATH 1550, 1585H, or 1572. 4 SH + 1 SH Lab. GPAMS II – Description and analysis of electrical and magnetic effects, geometric and physical optics and the wave nature of light; introduction to atomic physics, quantum mechanics, nuclear structure and radiation. Prereq.: PHYS 2601. 4 SH + 1 SH Lab.

990167 **PHYS 1501 + 1501L / 1502 + 1502L:** *Fundamentals of Physics I, II*

Description: FP I – Topics covered include kinematics, forces, energy, momentum, rotational kinematics, torque, angular momentum, simple harmonic motion, and mechanical waves. Not recommended for Mathematics, Chemistry, or Physics majors or Engineering students. Prereq.: Math 1507 or equivalent high school algebra and trigonometry. 4 SH + 1 SH Lab. FP II – A study of electricity, magnetism and light. Topics covered include electric charge forces and fields, electric potential, capacitance and resistance in direct current circuits, basic circuit analysis, magnetic forces and fields, induced emf, inductance, reflections, refraction, geometric optics as applied to lenses and mirrors, interference, and diffraction. Prereq.: PHYS 1501 or equivalent. 3 SH + 1 SH Lab.

- SOCIETIES AND INSTITUTIONS-

990153 **AFRST 2600:** *Black Studies I.*

Description: The social-historical and intellectual heritage of Black people in Africa and the Americas. 3 SH

990026 **AMER 2601:** *American Identity*

Description: Study of American Identity through historical, literary, artistic, material, media, and other sources. Emphasis on American pluralism and cultural debates over the meaning of American identity. 3 SH

990049 **ANTHR 2602:** *Introduction to Anthropology*

Description: An exposition of the past and present horizons of anthropology, with specific attention to the emergence of humans, prehistory, and human social and cultural systems. 3 SH

990110 **CRJUS 1500:** *Introduction to Criminal Justice*

Description: An overview of the American criminal justice process with emphasis upon its constitutional foundations, its constitutional limits, and the rights of the individual from arrest through sentencing and release. 3 SH

990028 **ECON 1501:** *Economics in Action.*

Description: An introduction to the United States' economic system and institutions through the examination of current economic problems. Not applicable for a major or minor in economics. 3 SH

990118 **ECON 1502** *Panic and Prosperity: U.S. Economic Policy Since the Great Depression.*

Description: Examines the crises and successes of the American economy since 1929, and how the economic policies of different presidential administrations affected the lives of U.S. citizens. Not applicable towards a major or minor in economics. 3 SH

990078 **ECON 1503:** *Rich and Poor: Diversity and Disparity in the U.S. Workplace.*

Description: Surveys how labor markets determine the distribution of income and the dramatic changes in the composition of the American labor force. Explores such issues as the widening gap between low and upper income groups, the characteristics of the poor, Affirmative Action, the glass ceiling, the mommy track, and family-friendly working environments. Not applicable towards a major or minor in economics. 3 SH

990149 **ECON 2610:** *Principles I.*

Description: An introduction to the theory of markets, including the behavior of consumers and the conduct of private and public business enterprise. The effects of monopoly and competition on private and social welfare. The role of government in promoting the economic welfare of consumers, workers, and minorities. Prereq.: MATH 1504. 3 SH

990119 **ECON 2630:** *Principles II.*

Description: Studies of growth, inflation, and unemployment at the national level and the performance of the U.S. economy in the global setting. The impacts of national economic policies on individual and social welfare. An extensive discussion and evaluation of the U.S. banking system and its effects on individuals and businesses. Prereq.; ECON 2610 3 SH

The General Education Committee has determined that a student must choose only one of the courses, ECON 1501, 1502, 1503. The student may choose to take one or both of the Principles courses, but may not combine either one of them with ECON 1501, 1502, 1503.

990037 **GEOG 2626:** *World Geography*

Description: A comparative study of representative regions of the world. Attention is focused on an examination of the physical, cultural, social and political attributes of selected regions. 3 SH

990016 **GEOG 2640:** *Human Geography*

Description: An examination of the place-to-place variation in people's utilization of the earth. Topics examined include the distribution of people, spatial variations in culture, urbanization and politization of space. 3 SH

990018 **HIST 1511:** *World Civilizations to 1500*

Description: Origins and growth of the major civilizations of the world from the earliest times to about 1500. 3 SH

990020 **HIST 1512:** *World Civilizations since 1500*

Description: Development of the major civilizations of the world from 1500 to the present. 3 SH

990022 **HIST 1511H:** *World Civilizations to 1500 Honors*

Description: An honors course in the origins and growth of the major civilizations of the world from earliest times to about 1500 with emphasis on the analysis and critical evaluation of historical developments. Prereq.: Eligibility for admission to University Honors Program, or recommendation of a history instructor. 3 SH

990024 **HIST 1512H:** *World Civilizations since 1500 Honors*

Description: An honors course in the origins and growth of the major civilizations of the world from about 1500 to the present with emphasis on the analysis and critical evaluation of historical developments. Prereq.: Eligibility for admission to University Honors Program, or recommendation of a history instructor. 3 SH

990030 **HIST 2605:** *Turning points in U.S. History I*

Description: Key episodes in the social, economic, political, and cultural development of the United States to 1877, exploring how diverse peoples shaped the growing nation. 3 SH

990031 **HIST 2606:** *Turning Points in U.S. History II*
Description: Key episodes in the social, economical, political, and cultural development of the United States since 1877, exploring how diverse peoples shaped the maturing nation. 3 SH

990029 **POLIT 1550:** *Politics and Globalization*
Description: Study of politics, government, and societal institutions at both the national and international levels, emphasizing the impact of international and globalizing trends in society. 3 SH

990117 **POLIT 1560:** *American Government.*
Description: The foundations of American democratic government and citizenship with an emphasis on the responsibilities of citizenship, civil rights, and civil liberties, parties and elections, and American political institutions. Students are encouraged to understand and discuss issues of social justice, equality, and freedom, and majoritarianism. Topics include the civil rights movement, campaign finance reform, abortion, federalism, and affirmative action. 3 SH

990139 **POLIT 2640:** *Comparative Governments.*
Description: A comparative analysis of the development of institutions, attitudes, public policy, economic and social systems of a number of foreign political systems. Prereq.: POLIT 1550 or 1560 3 SH

990098 **RELIG 2601:** *Introduction to World Religions*
Description: A survey of the major world religions exploring their distinctive features and common threads. A study of their founders, systems of thought, symbols, and sacred literatures. 3 SH

990100 **RELIG 2617:** *Introduction to Eastern Religions*
Description: A survey of the religions of India, China, Japan, their systems of thought, moral values, and methods of personal transformation. 3 SH

990050 **SOCIO 1500:** *Introduction to Sociology*
Description: An introduction to the science of human societies and groups; analysis of the structures, functions, and processes that bring about changes in societies, groups, communities, classes and institutions. 3 SH

990011 **TCOM 1595:** *Survey of American Mass Communication.*
Description: A rhetorical examination of the development, operation and functions of radio, television, film and print media in America. Television documentaries and films will illustrate the implications of mass communication. The student will be expected to examine how a person may be individually affected by mass communications and how society is affected by the mass communication process. 3 SH

990103 **WMST 2601:** *Introduction to Women's Studies*

Description: Introduces key concepts, theoretical frameworks, and interdisciplinary research drawn from current scholarship about women. The course concentrates on major issues relevant to the status and roles of contemporary women, including examination of effects of sexism, racism, ethnicity, and class distinction. 3 SH

- ARTISTIC AND LITERARY PERSPECTIVES-

990152 **AFRST 2601:** *Black Studies II.*

Description: The cultural and intellectual heritage of Black people in Africa and the Americas. 3 SH

990131 **ART 1541:** *Survey of Art History 1*

Description: A study of world art, focusing on the western European tradition. Covers the period from pre-historic times through 1500. Introduces key concepts, methods and vocabulary for the study of art. 3 SH

990130 **ART 1542:** *Survey of Art History 2*

Description: A study of world art, focusing on the Western European tradition. Covers the period from 1500 through the present. Introduces key concepts, methods, and vocabulary for the study of art. 3 SH

990065 **ENGL 1590:** *Introduction to Literature*

Description: Primarily British or American works in a variety of genres, chosen to illuminate a central topic, are read and discussed critically to promote understanding and enjoyment of reading. Will be focused on one of four topics: Nature and the Environment, "The Good Life," Science and Technology, or Social Justice. 3 SH

990048 **ENGL 2610:** *World Literature*

Description: Literature in translation from Western and non-Western cultures. Prereq.: 1551 3 SH

990071 **ENGL 2617:** *Women in Literature*

Description: Examination of works by and about women, drawn primarily from American and English writers. Prereq.: ENGL 1551 or equivalent. 3 SH

990047 **ENGL 2618:** *American Literature and Diversity*

Description: Writers and works in relation to the diversity of American culture, politics, lifestyles, and social movements. Prereq.: ENGL 1550 or the equivalent. 3 SH

990072 **ENGL 2631:** *Mythology*

Description: An introductory study of myths, chiefly classical, with some attention to their origins and cultural significance, and of literary works, both classical and modern, in which myths are used. Prereq.: ENGL 1551 3 SH

990046 **ENGL 2665:** *Introduction to Film Study*

Description: An introduction to film as a medium of artistic expression. The course studies technical aspects of film and the relationship of film to other media and society. Prereq.: English 1551. 3 SH

- 990063** **FNLG 2605:** *Topics in Foreign Drama*
 Description: Study of representative plays written in a language other than English (but read in English translation): examination of relevant critical theories and of historic and institutional factors affecting the development of the genre; special attention to ethical issues raised in the plays. 3 SH
- 990227** **HPES 2698:** *Survey of Dance*
 Description: The role of dance in culture and history, tracing the evolution of various folk, social, and concert forms. Structural and stylistic elements important for the appreciation of movement and dance. 3 SH
- 990039** **MUSHL 2617:** *Film Music*
 Description: A historical survey of the use of music in motion pictures. Examination of different styles in works by major composers. 3 SH
- 990052** **MUSED 2621:** *Musical Literature and Appreciation*
 Description: Emphasis on the development of listening techniques that can be applied to music of western and non-western cultures through comparison and contrast of music's significant historical periods. 3 SH
- 990105** **MUSHL 2616:** *Survey of Jazz*
 Description: A historical survey of the origins, influences, and stylistic features of jazz from its beginnings to the present, with emphasis on performers, compositions, and innovations. 3 SH
- 990038** **MUSHL 2618:** *Rock 'n Roll to Rock*
 Description: An historical survey of the evolution of Rock 'n Roll into Rock with emphasis on the interrelationships of the music and social and political influences and the interaction of Rock with other forms of music. 3SH
- 990010** **THTR 1560:** *Understanding Theater*
 Description: The theory, history, cultural role, and physical characteristics of the theater as an institution in human society. 3 SH
- 990009** **THTR 1590:** *History of Motion Pictures*
 Description: The history of the motion picture from its beginning to the present, with emphasis on the milestones of the film as a performing art. Viewing of significant films from various periods and countries. 3 SH
- 990008** **THTR 2690:** *The Art of Motion Pictures*
 Description: Analysis of the structure of the motion picture, the development of the script, the function of editing, the approach to acting in film production, and the problems faced by a director in film production. Criteria of artistic filmmaking are studied. Examples from motion pictures are screened and discussed. 3 SH

Substitute courses for Theater 1560 and 1590

990014 **THTR 4860:** *Dramatic Texts.*

Description: A study of dramatic texts in performance, from antiquity to the present. Emphasis on performance histories, and the production company's role as interpreter of the work. Prereq.: THTR 3762 or consent of the instructor. 3 SH

990015 **THTR 4891:** *History of Theater.*

Description: A history of the physical theater from antiquity to the present. Emphasis on theater architecture, stagecraft and audiences. Prereq.: Upperclass standing with a minimum of 9 S.H. of THTR coursework, or consent of the instructor. 3 SH

- PERSONAL AND SOCIAL RESPONSIBILITY-

990075 **COUNS 1587:** *Introduction to Health and Wellness in Contemporary Society.*

Description: This course provides an introduction to the wellness model integrating physical, mental and emotional well-being. Using current research, students will explore decision making models looking at ethical, theoretical, multicultural and practical concerns in developing their own wellness strategies. 3 SH

990113 **FNUTR 1551:** *Normal Nutrition*

Description: The fundamentals of normal nutrition as they apply to health; nutritional needs during various stages of the life cycle; dietary guides and their application to the selection of adequate diets; problems of nutritional deficiencies and excesses. 3 SH

990067 **HSC 1568:** *Healthy Lifestyles*

Description: Personal health issues and prevention of premature deaths will be analyzed from physical, emotional, social and spiritual perspectives. Personal plans for disease prevention and healthful living will be developed. Importance of health promotion to the individual, region, nation and world will be emphasized. 3 SH

990086 **PHIL 2609:** *Technology and Human Values*

Description: Examination of the impact of technology and science on contemporary human values and investigation of social and political perspectives on modern technocracy, based on case studies in science, medicine, and engineering. 3 SH

990064 **PHIL 2625:** *Introduction to Professional Ethics*

Description: An examination of the ideals and virtues central to professionalism; study of selected codes of professional ethics and their roots in classical ethical traditions; and analysis of selected ethical issues and problems in a variety of professions. 3 SH

990353 **PHIL 3727:** *Environmental Ethics*

Description: Application of ethical theories in evaluating human interaction with the natural environment, analysis of rights and duties regarding other species and future generations, the ethics of environmental activism, and philosophical and religious perspectives on the environmental issues. Prereq.: PHIL 2600 or ENST 2600. 3 SH

99006 **PSYCH 1560:** *General Psychology*

Description: An examination of scientific and clinical approaches to understanding the relationships between one's physical, mental and emotional well-being, and quality of life, including the basic principles governing the growth and maintenance of behavior, emotion and cognition. 3 SH

990061 **PSYCH 3707:** *Psychology of Intimate Relationships.*

Description: Psychological principles pertaining to intimate relationships, both marital and non-marital, and family dynamics. The course will include topics such as communication, problem solving, domestic violence and sexuality. Prereq.: PSYCH 1560. 3 SH

990069 **PSYCH 3758:** *Lifespan Development*

Description: Study of theory and research on development from conception to death. Focus upon psychological, physiological, social, and cultural influences. Prereq.: PSYCH 1560 3 SH

990101 **RELIG 2621:** *Religion and Moral Issues*

Description: The relation of specific religious and moral issues to questions of personal conduct and social policy. 3 SH

990097 **RELIG 2631:** *Religion and the Earth*

Description: A cross-cultural survey of the religious beliefs and values that have shaped out thinking about the earth. An exploration of the shifts in religious thought called for by the ecological crises of sustainability. 3 SH

- SELECTED TOPICS AND ELECTIVES -

990054 **BIOL 3718:** *Women, Science and Technology.*

Description: An overview of the role women have played in scientific and technological advances. Examines current events as they relate to science and technology using an interdisciplinary approach. Examines the effect of advances in science and technology on modern society, including the effects on women. 3 SH

990114 **HMEC 3780:** *Consumer Economics*

Description: Managing the family's economic resources through the use of the decision-making process. Current consumer issues and sources of information for consumers. Prereq.: ECON 2610 or 2630. 3 SH

990082 **PHIL 2600:** *Introduction to Philosophy.*

Description: The nature of philosophy and its relation to science, religion, and art; study of the philosophical approach and attitude, the basic problem areas in philosophy, and some typical philosophical viewpoints. 3 SH

990083 **PHIL 2619:** *Introduction to Logic.*

Description: Introduction to syllogistic or classical logic, symbolic, and inductive logic. Emphasis will be placed on the rules of the syllogism, immediate inference, propositional functions, classes, truth tables, Venn diagrams; the use of analogy, generalization, the verification of hypotheses and scientific method. 3 SH

990120 **PHIL 2630:** *Critical Thinking*

Description: An examination of the logical skills needed for critical thinking in practical situations. Topics include procedures and guidelines for identifying and evaluating informal fallacies, and writing and critiquing argumentative essays. 3 SH

990099 **RELIG 2605:** *Myth, Symbol, and Ritual.*

Description: An introduction to the nature and function of myth, symbol, and ritual. Myth interpretation, the relationship between societies and their myths, and the cultural use of myths, symbols, and rituals in religious and spiritual contexts. 3 SH

990077 **SOCIO 3745:** *Sociology of Health, Illness, and Health Care*

Description: Social attitudes toward illness. Cultural and social factors in disease definition of illness, and organization of the health profession and health facilities. Lectures and field work. Prereq.: SOCIO 1500, or admission to the NEOUCOM-YSU program. 3 SH

990051 **SPED 2630:** *Individuals with Exceptionalities in Society.*

Description: Characteristics, adjustment problems, and special needs of individuals with exceptionalities (disabilities and/or gifts and talents). The laws and implementations; due process and resources recommended for the accommodation of individuals with exceptionalities in a variety of settings including the workplace, medical facilities, recreation and leisure time formats, education and personal-social environments. 3 SH

C – 1: RESEARCH EXPERIENCES FOR UNDERGRADUATES, SUMMER 2002

Site Information	Contact Information	Additional Information
Chemistry		
<p>National Institute of Standards and Technology REU: SURFing the Chemical Science and Technology Laboratory at the National Institute of Standards and Technology (NIST) in Chemistry, Chemical Engineering and Biotechnology Chemical Sciences and Technology Laboratory Gaithersburg, MD 20899-8300</p>	<p>Albert Lee, Jeanice Brown-Thomas 301-975-2857 albert.lee@nist.gov jeanice.brownthomas@nist.gov</p>	<p>Research Topics/Keywords: chemistry, chemical engineering, biochemistry Cofunded: Department of Defense (DOD)</p>
<p>University of North Dakota Main Campus REU: Research Experiences for Undergraduates Emphasizing Environmental Chemistry Applications at the University of North Dakota Department of Chemistry Grand Forks, ND 58202-9024</p>	<p>Evguenii I. Kozliak 701-777-2145 ekozliak@mail.chem.und.nodak.edu</p>	<p>Research Topics/Keywords: chemistry, chemical engineering, space studies, environmental chemistry</p>
<p>Virginia Commonwealth University REU Site: Practices and Perspectives Department of Chemistry Richmond, VA 23284-2006</p>	<p>Suzanne Ruder 804-828-7519 sruder@vcu.edu</p>	<p>Research Topics/Keywords: chemistry, chemical engineering</p>
Engineering		
<p>Colorado State University Research Experiences for Undergraduates in Chemical Engineering Using the Colorado Bioprocessing Center Chemical and Bioresource Engineering CO 80523-1370</p>	<p>Dr. Vincent G. Murphy 970-491-1791 vince@engr.colostate.edu</p>	<p>Research Topics/Keywords: Chemical; Bioresource; Bioprocessing Abstract of Award</p>
<p>University of Connecticut REU Site in Chemical Engineering at the Nanoscale Chemical Engineering Storrs, CT 06269-3222</p>	<p>Dr. Joseph J. Helble 860-486-4019 helble@engr.uconn.edu</p>	<p>Research Topics/Keywords: Chemical; Nanoscale Abstract of Award</p>
<p>University of Kansas Center For Research, Inc. Research Experience for Undergraduates Chemical & Petroleum Engineering Lawrence, KS 66045-7609</p>	<p>Russell D. Ostermann, Ph.D. 785-864-2907 ostermann@ku.edu</p>	<p>Research Topics/Keywords: Chemical Engineering; Petroleum Engineering; Biomedical Engineering; Fuel Cell Technology; Computer-aided Molecular Modeling and Design; Microchip Fabrication. Abstract of Award</p>
<p>North Carolina State University NSF Green Processing Undergraduate Research Program Chemical Engineering NC 27695-7905</p>	<p>Dr. Christine S. Grant 919-515-2317 grant@eos.ncsu.edu</p>	<p>Research Topics/Keywords: Environmental and Chemical Engineering; Green process technologies Comments: Additional Point of Contact: Ms. Kristen Reberg-Horton Tel: (919) 515-3639 E-mail: kgreberg@unity.ncsu.edu Abstract of Award</p>

University of Pittsburgh Chemical Engineering Research Experiences for Undergraduates Chemical and Petroleum Engineering PA 15261	Dr. Mohammad M. Ataai 412-383-9744 ataai@engrng.pitt.edu	Research Topics/Keywords: Chemical and Petroleum engineering Abstract of Award
University of South Carolina Novel Technologies in Pollution Prevention Chemical Engineering SC 29208	Dr. Michael D. Amiridis 803-777-7294 amiridis@enqr.sc.edu	Research Topics/Keywords: Pollution; Chemical Engineering Comments: Additional Point of Contact: Dr. John E. Van Zee, E-mail: vanzee@enqr.sc.edu; Tel: 803-777-2285 Abstract of Award
South Dakota School of Mines and Technology REU Site: Molecular Level Modification of Surfaces Chemical and Chemical Engineer Rapid City, SD 57701-3995	Robb M. Winter 605-394-1237 robb.winter@sdsmt.edu	Research Topics/Keywords: Chemical Engineering Abstract of Award
Materials Research		
University of New Mexico REU Site in Microengineered Materials Center for Micro-Engineered Ceramics Albuquerque, NM 87131	Professor Abhaya K. Datye 505-277-2833 datye@unm.edu	Research Topics/Keywords: chemical engineering, materials science, chemistry, nanomaterials, ceramics, fuel cells, sol gels, sensors, aerosols, plasma etching Comments: Includes participation of pre-college teachers Abstract of Award
Clemson University REU Site in Chemical Engineering at Clemson University: Experimental Research in Novel Materials Department of Chemical Engineering Clemson, SC 29634	Professor Graham Harrison 864-656-6399 grahamh@clemson.edu	Research Topics/Keywords: Polymeric, Catalytic, and Bio-Inspired Materials Abstract of Award
University of South Carolina Materials Research in Chemical Engineering Department of Chemical Engineering Columbia, SC 29208	Professor Michael Amiridis 803-777-7294 amiridis@viper.engr.sc.edu	Research Topics/Keywords: Materials for Power Sources Abstract of Award
Physics		
Hope College Hope College Physics and Engineering Physics and Engineering Holland, MI 49423	John Krupczak 616-395-7152 phys_reu@hope.edu	Research Topics/Keywords: Nuclear Physics, Astrophysics, Fracture Mechanics, Structural Dynamics, Non-linear Control, Science Education, Chemical Engineering Abstract of Award