Department of Biology

Dr. Robert Gannon, Head
Room 2035, Bailey Science Center

The Department of Biology has two programs of courses–one leading to a Bachelor of Science degree with a major in biology and one to a Bachelor of Arts degree with a major in biology. In addition, the Master of Science with a major in biology is also offered. The department also participates in several pre-professional programs such as pre-dental hygiene, pre-occupational therapy, pre-physical therapy, pre-respiratory therapy, pre-optometry, and medical technology.

Biology is the study of life and represents one of the most dynamic disciplines in science. The courses offered encompass a wide range of subject matter, from cellular to organismal studies. A large selection of courses emphasizing principles and concepts allows students to concentrate in a number of subdivisions of biology. The structuring of core and elective courses in the biology program is designed to prepare students for employment in biology-related positions, as well as for advanced study in graduate school, including biology, medicine, dentistry, veterinary science, and allied health fields.

The department also participates in several two-year professional programs. Upon completion of these two-year programs, the student may qualify for an Associate of Arts degree.

The programs of study in the Department of Biology have numerous desired outcomes. Examples of these outcomes include the following:

SELECTED EDUCATIONAL OUTCOMES

1. Develop and test hypotheses, collect and analyze data, and present the results and conclusions in both written and oral formats used in peer-reviewed journals and at scientific meetings.
2. Describe the evolutionary processes responsible for biological diversity, explain the phylogenetic relationships among the major taxa of life, and provide illustrative examples.
3. Demonstrate an understanding of the cellular basis of life.
4. Relate the structure and the function of DNA/RNA to the development of form and function of the organism and to heredity.
5. Interpret ecological data pertaining to the behavior of the individual organism in its natural environment; to the structure and function of populations, communities, and ecosystems; and to human impacts on these systems and the environment.

EXAMPLES OF OUTCOME ASSESSMENTS

The Department of Biology assesses the extent to which the programs' requirements create the desired outcomes by using a variety of techniques. Examples of these assessments include the following:

1. Regular advising and evaluation of a student's academic progress are made each semester.
2. So that students possess a good foundation in basic biological principles before taking required and elective Senior College courses in biology, their academic progress in Area F core courses is monitored to ensure that they have achieved a minimum grade of "C" in biology courses applied to the major.
3. Senior Seminar, the capstone course, is used to
    a. assess the understanding of advanced concepts and principles in biology and breadth of knowledge in key areas using the Major Field Test in biology
    b. evaluate students' ability to write scientifically correct reports and engage in knowledgeable discourse and debate with peers and faculty
    c. administer an exit survey for program evaluation.

B.S. DEGREE WITH A MAJOR IN BIOLOGY

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE WITH A MAJOR IN BIOLOGY

Core Curriculum Areas A, B, C, D.2.a, and E . . . . . .42 hours
(See VSU Core Curriculum)
Biology majors are required to take pre-calculus (MATH 1113) in Area A and calculus (MATH 2261) in Area D.2.a One hour of calculus will transfer to the upper elective hours. Biology majors must take 8 hours of science in Area D.2.a and may choose any of the following courses: BIOL 1107K, CHEM 1211 and 1211L, CHEM 1212 and 1212L, or calculus-based physics (PHYS 2211K and PHYS 2212K). If biology or chemistry courses are taken in Area D.2.a, biology majors may take non-calculus-based physics (PHYS 1111K and PHYS 1112K) in Area F.

Core Curriculum Area F. . . . . .18 hours
Science: . . . . . 14-15 hours
BIOL 1100, BIOL 1108K, CHEM 1211, CHEM 1211L, CHEM 1212, CHEM 1212L, PHYS 1111K, PHYS 1112K, PHYS 2211K, PHYS 2212K
Math 2262 or MATH 2620. . . . . 3-4 hours
A minimum grade of "C" is required for all BIOL, CHEM, MATH, and PHYS courses.

Senior College Curriculum. . . . . .60 hours
A minimum grade of "C" is required for all BIOL and CHEM courses.
Required Biology Courses . . . . . 8 hours
BIOL 3200, BIOL 3250, BIOL 4900
Biology Electives . . . . . 26-27 hours
3000-level and above (but not BIOL 4830, BIOL 4840, BIOL 4850)
Four courses with labs required.
BIOL 4950 limited to 3 hours.
Required Chemistry Courses . . . . . 11 hours
CHEM 3401, CHEM 3402, CHEM 3601
General Electives . . . . . 11-12 hours
Carry-over from Core. . . . . 3-4 hours

Total hours required for the degree. . . . . 120 semester hours

B. A. DEGREE WITH A MAJOR IN BIOLOGY

The B.A. degree with a major in biology is ideal for students who do not need the extra math, chemistry, and physics requirements that are found in the B.S. degree with a major in biology. For instance, most allied health programs do not require a full year of organic chemistry, calculus, or even physics. Therefore, students pursuing those careers after graduating from VSU may wish to consider this B. A.degree option rather than the B.S. degree.

REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE WITH A MAJOR IN BIOLOGY

Core Curriculum Areas A, B, C, D.2.a, and E . . . . . .42 hours
See VSU Core Curriculum, to include:
Area A - Math 1113 . . . . . 3 hours
Area C - Foreign Language . . . . . 3 hours
Area D.2.a - MATH 2620 or 2261 . . . . . 3-4 hours
Science: BIOL 1107K, CHEM 1211, 1211L . . . . . 7-8 hours

Core Curriculum Area F. . . . . .18 hours
Foreign Language . . . . . 6 hours
Science* . . . . . 12-13 hours
BIOL 1100, BIOL 1107K, BIOL 1108K, BIOL 1200, CHEM 1211
CHEM 1211L, CHEM 1212, CHEM 1212L

*One hour transfer to senior curriculum. A minimum grade of "C" is required for all BIOL, CHEM, and MATH courses.

Senior College Curriculum. . . . . .60 hours
Required Biology Courses . . . . . 8 hours
BIOL 3200 (3 hours), BIOL 3250 (4 hours), BIOL 4900 (1 hour)
Biology Electives . . . . . 16 hours
3000-level and above (but not BIOL 4830, 4840, 4850)
BIOL 4950 limited to 3 hours
Three courses with labs required
Upper-level math or science sequence (not biology) . . . . . 6 hours
Foreign language* . . . . . 3 hours
General Electives (9 hours of upper-level required) . . . . . 26 hours
Carry-over from core . . . . . 1 hour

*12 hours of a single foreign language required

Total hours required for the degree. . . . . 120 semester hours

Department of Chemistry

Dr. James T. Baxter, Head
3025 Bailey Science Center

Students who complete the major in chemistry will graduate with a Bachelor of Science degree. The program in chemistry is approved by the Committee on Professional Training of the American Chemical Society. Students who complete the approved major will have their degree certified by the American Chemical Society.

All chemistry majors complete the general chemistry sequence and a common forty-hour sequence of major courses. These courses, plus the prerequisite hours in physics and mathematics, provide each student with a solid background in analytical, inorganic, organic, physical, and biochemistry.

Each student is required to select 6 hours of advanced chemistry courses as part of the major. The selection, made with the assistance of a departmental advisor, will be made with the postgraduate needs of the student in mind. Students who wish to pursue graduate study in chemistry should select all chemistry courses, while those who wish to accept positions in industrial or government laboratories may wish to select some chemistry and some biology courses to complete the major. Those who plan to attend professional school (medicine, dentistry, veterinary medicine, law, or business) will select courses to satisfy entry requirements in the particular program of interest.

The chemistry major is designed for students to develop the critical thinking skills needed for problem solving. Students will be able to state a problem succinctly, outline methods of solving the problem, and proceed to solve the problem after choosing a suitable method. Mastery of problem solving techniques is especially apparent in students who participate in an undergraduate research project. Although the research problems chosen for solution by students are taken from the chemical sciences, the methods developed for problem solving are applicable to other fields.

The core curriculum provides opportunity for every student in the University to obtain the skills necessary for effective written and oral communication. The department requires chemistry majors to demonstrate mastery of those skills by preparing and presenting papers in advanced chemistry courses. Each senior must present a departmental seminar on a topic which is generally not covered in courses in the department. Successful completion of the departmental seminar will demonstrate that the student is able to search the literature on an unfamiliar topic, prepare a pertinent outline and abstract of the topic, present the material in a clear oral presentation, and answer questions on the topic from both faculty and student colleagues. Majors may satisfy the requirement for the senior seminar by completing CHEM 4210.

SELECTED EDUCATIONAL OUTCOMES

The major in chemistry is designed to prepare graduates to enter professional school, to attend graduate school, or to join the work force in a government, industrial, or commercial setting. Among the anticipated educational outcomes of the department are that each graduate will:

1. understand, speak, and write in the language used by professional chemists;
2. demonstrate proficiency in problem solving and experimental design and show proficiency in laboratory procedure and the skills of measurement, analysis, data treatment, and interpretation;
3. demonstrate an understanding of professional ethics in terms of data collection, evaluation, and reporting and an understanding of environmental issues concerning handling and disposal of chemicals and chemical wastes; and understand the importance of chemistry in its impact on society;
4. demonstrate proficiency in the principles and theories that govern chemistry and appreciate the fact that chemistry is a changing discipline which requires a commitment to life-long learning.

EXAMPLES OF OUTCOME ASSESSMENTS

In order to follow the success with which the educational outcomes are fulfilled, the chemistry department has developed a number of assessment techniques, both formal and informal. The formal assessment techniques include the following:

1. The department will maintain a portfolio of each chemistry major that will contain the following materials:
   a. results of discipline-related American Chemical Society Examinations.
   b. samples of written assignments (papers and laboratory reports) from upper division classes.
   c. faculty evaluation of the student's senior seminar and abstract.
2. Each student will present a seminar on a subject related to chemistry in the senior year. The student will gather and organize the necessary information, develop appropriate visual media, and write an abstract of the talk.
3. A formal alumni interview will be used to evaluate the program.

B. S. DEGREE WITH A MAJOR IN CHEMISTRY

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE WITH A MAJOR IN CHEMISTRY

The chemistry department requires that the prerequisites for a number of chemistry courses be completed with a grade of "C" or better. Majors in the department should consult an advisor at frequent intervals to be certain that prerequisites are met at the appropriate time and with a suitable grade.

Core Areas A, B, C, D.2.a, and E. . . . . .42 hours
(See VSU Core Curriculum)
Chemistry majors must take MATH 1113 in Area A and MATH 2261 in Area D.2.a One hour of MATH 2261 will carry over to Area F. In Area D.2.a, chemistry majors may select eight hours from CHEM 1211/1211L, CHEM 1212/1212L, PHYS 2211K, PHYS 2212K, or BIOL 2010.

Core Area F. . . . . 18 hours[1]
MATH 2261 (Carry-over from Area D.2.a) . . . . . 1 hour
MATH 2262 . . . . . 4 hours
CHEM 1211 and 1211L (unless taken in Area D.2.a) . . . . . 0-4 hours
CHEM 1212 and 1212L (unless taken in Area D.2.a) . . . . . 0-4 hours
CHEM 2310 . . . . . 4 hours
PHYS 2211K[2] (unless taken in Area D.2.a) . . . . . 0-4 hours
PHYS 2212K[2] (unless taken in Area D.2.a) . . . . . 0-4 hours

1 Hours in excess of 18 will carry over into the Senior College Curriculum.
2 Students in the pre-professional option may substitute PHYS 1111K for PHYS 2211K and PHYS 1112K for PHYS 2212K.

CHEMISTRY MAJOR: AMERICAN CHEMICAL SOCIETY CERTIFIED DEGREE

Senior College Curriculum. . . . . .60 hours

Of the 60 semester hours, 39 must be in courses numbered 3000 or above.

CHEM 2210 . . . . . 1 hour
CHEM 3401, CHEM 3402 . . . . . 8 hours
CHEM 3510 . . . . . 4 hours
CHEM 3601, CHEM 3601L . . . . . 5 hours
CHEM 3801, CHEM 3802 . . . . . 8 hours
CHEM 4310 . . . . . 4 hours
Advanced courses in Chemistry . . . . . 6 hours
Modern Foreign Language[3] . . . . . 6-9 hours
Electives[4] . . . . . 15-18 hours

3 If three hours of language are taken in Area C of the core, only six will be required in this portion of the major.
4 Includes hours which carry over from Area F.

Total hours required for the degree. . . . . 120 semester hours

CHEMISTRY MAJOR: AMERICAN CHEMICAL SOCIETY CERTIFIED DEGREE

Biochemistry Option

Senior College Curriculum. . . . . .60 hours

Of the 60 semester hours, 39 must be in courses numbered 3000 or above.

CHEM 2210 . . . . . 1 hour
BIOL 2010[5] . . . . . 0-4 hours
BIOL 2230, BIOL 2270, BIOL 3100 . . . . . 12 hours
CHEM 3401, CHEM 3402 . . . . . 8 hours
CHEM 3510 . . . . . 4 hours
CHEM 3601, CHEM 3601L, CHEM 3602. . . . . 8 hours
CHEM 3801, CHEM 3802 . . . . . 8 hours
CHEM 4310 . . . . . 4 hours
Modern Foreign Language[6] . . . . . 6-9 hours
Electives[7, 8] . . . . . 2-9 hours

Note: Students must obtain 39 total upper division (3000- or 4000-level) hours, with 6 of these 39 hours in a single subject other than chemistry.

5 Unless taken in Area D.2.a
6 If three hours of language are taken in Area C of the core, only six will be required in this portion of the major.
7 Includes hours which carry over from Area F.
8 May include CHEM 4910 Laboratory Problems, but must be a biochemistry topic.

Total hours required for the degree. . . . . 120 semester hours

CHEMISTRY MAJOR: PRE-PROFESSIONAL OPTION

Senior College Curriculum. . . . . .60 hours

Of the 60 semester hours, 39 must be in courses numbered 3000 or above.

CHEM 2210 . . . . . 1 hour
BIOL 2010 . . . . . 4 hours
Science elective, 2000 or above[9] . . . . . 4 hours
CHEM 3401, CHEM 3402 . . . . . 8 hours

CHEM 3510 . . . . . 4 hours
CHEM 3601, CHEM 3601L . . . . . 5 hours
CHEM 3801 or CHEM 3802 . . . . . 4 hours
Upper Division mathematics, computer science, or science electives[10] . . . . . 7-8 hours
Modern Foreign Language[11] . . . . . 6-9 hours
Electives[12] . . . . . 13-17 hours

9 Students who wish to attend medical, dental, or veterinary school or emphasize biochemistry in the chemistry program shall elect BIOL 2270.

10 Students who wish to emphasize biochemistry shall take CHEM 3602 & CHEM 3802.

11 If three hours of language are taken in Area C of the core, only six will be required in this portion of the major.

12 Includes hours that carry over from Area F.

MINOR IN CHEMISTRY

Minor in Chemistry . . . . . 15-18 hours
CHEM 3401, CHEM 3402, CHEM 3601 . . . . . 11 hours
4 to 7 hours selected from CHEM 2310 or any upper division chemistry courses . . . 4-7 hours

Engineering Studies

Dr. Barry Hojjatie, Coordinator
Room 1169, Nevins Hall

ENGINEERING TRANSFER PROGRAMS

Engineering is the application of mathematical and scientific principles, technological tools, and practical experience to the solution of real-world problems. The Engineering Studies Program at Valdosta State University is part of the Department of Physics, Astronomy, and Geosciences. No degree in engineering is offered; however, courses from engineering, the sciences, mathematics, computer science, the humanities, and the social sciences provide a strong and intensive curriculum that effectively covers two to three years of work for a wide variety of engineering fields. The remaining course work required for a Bachelor's degree is completed by transfer to a four-year engineering institution. Formal agreements exist for transfer to the Georgia Institute of Technology and to Mercer University, but informal transfer arrangements can also be made with other qualified institutions. The Engineering Dual Degree Program with the Georgia Institute of Technology enables students to earn a B.S. degree from Valdosta State University and a B. S. in engineering degree from the Georgia Institute of Technology.

The Engineering Studies Program is designed to prepare students to transfer as third-year students into an engineering curriculum at a degree-granting institution. A major part of this program is the Regents' Engineering Transfer Program (RETP), administered by the Georgia Institute of Technology. The program covers course work through the first two years in four major tracks: civil engineering, electrical and computer engineering, industrial engineering, and mechanical and aerospace engineering. Other alternatives for transfer in engineering include the Mercer University Transfer Program in biomedical engineering, computer engineering, electrical engineering, environmental engineering, industrial engineering, and mechanical engineering; and the regular transfer option to the University of Georgia in agricultural engineering and biological engineering. The regular transfer program option also includes transfer to Southern Polytechnic State University to complete a Bachelor of Science degree in an engineering technology major.

Students who desire to enter one of these programs should consult the engineering studies coordinator as early as possible to understand the requirements of the program and to develop an acceptable program of study. This contact is particularly important for planning the specialized Dual Degree curriculum.

Students in the Engineering Studies Program may be able to gain related work experience through the VSU Co-op Program. Such experience may prove valuable in terms of career exploration, acquisition of new skills, and career development. In most cases, the Co-op work contract can be continued without interruption after a student transfers to a four-year engineering school. Students seeking more information should contact the Coordinator of Engineering Studies or the Office of Cooperative Education.

SELECTED EDUCATIONAL OUTCOMES

1. Students will demonstrate understanding of fundamental sciences through application to problem solving and experimental laboratory analysis.
2. Students will demonstrate understanding of mathematics through application to mathematical analysis and problem solving.
3. Students will be able to apply scientific and mathematical principles to solve engineering problems.
4. Students will demonstrate the effective use of computers through application packages, programming, scientific calculations, and graphical applications.

EXAMPLES OF OUTCOME ASSESSMENTS

The curricula used at VSU to prepare engineering students to transfer are controlled primarily by the courses required at the degree-granting institutions. To be accepted as transfer credit, VSU courses must duplicate the corresponding courses at the transfer institution. Assessment of the VSU engineering program must therefore monitor the individual course contents, which can change from time to time, as well as the success of the students who transfer. To monitor the progress of students who transfer, records of the final grades, degree conferred, and any honors received are maintained and examined annually to determine the effectiveness of the Engineering Studies Program. Transfer students are also asked to provide an evaluation of their VSU engineering preparation during their final year before graduation.

RECOMMENDED COURSES FOR THE REGENTS' ENGINEERING TRANSFER PROGRAM

Engineering students are required to meet the Core Curriculum of the Georgia Institute of Technology by taking Calculus I (MATH 2261) in Area A, Calculus II (MATH 2262) and an approved lab science sequence in Area D, and Computer Science (CS 1010) in Area B.

Core Curriculum Area A . . . . . 9 hours
ENGL 1101 or ENGL 1101H. . . . . 3 hours
ENGL 1102 or ENGL 1102H . . . . . 3 hours
MATH 2261 (1 hour counts in Area B) . . . . . 3 hours
Core Curriculum Area B . . . . . 4 hours
CS 1010 . . . . . 3 hours
MATH 2261 (3 hours count in Area A) . . . . . 1 hour
Core Curriculum Area C. . . . . 6 hours
See requirements for Area C in the VSU Core Curriculum. See Index.
Core Curriculum Area D. . . . . 11 hours
BIOL 1107K, CHEM 1211/1211L, CHEM 1212/1212L, GEOL 1121, PHYS 2211, PHYS 22128 hours
MATH 2262 (1 hour counts in Area F) . . . . . 3 hours
Core Curriculum Area E . . . . . 12 hours
See course requirements for Area E in the VSU Core Curriculum. See Index.
Core Curriculum Area F . . . . . 18 hours
PHYS 2211-2212, if not taken in Area D . . . . . 0-8 hours
Lab Science Sequence, if not taken in Area D . . . . . 0-8 hours
ENGR 2010 . . . . . 2 hours
MATH 2262 (3 hours count in Area D). . . . . 1 hour
MATH 2263 . . . . . 4 hours
MATH 3340 . . . . . 3 hours

The engineering studies curriculum for each track is shown on the next pages:

Valdosta State University Engineering Studies Curriculum for Transfer to the Georgia Institute of Technology in Civil Engineering

FALL SEMESTER	Hours	SPRING SEMESTER	Hours
1st YEAR			
MATH 1113	(3)	MATH 2261	(4)
CHEM 1211 & 1211L	(4)	CS 1010	(3)
ENGR 2010	(2)	ENGR 2500	(3)
ENGL 1101	(3)	ENGL 1102	(3)
POLS 1101	(3)	HIST 2111 or HIST 2112	(3)
Total Hours	**15**	**Total Hours**	**16**
2nd YEAR			
MATH 2262	(4)	MATH 2263	(4)
PHYS 2211	(4)	PHYS 2212	(4)
CS 1301	(4)	ENGR 2200	(3)
ENGL 2111, ENGL 2112,		BIOL 2010	(4)
or ENGL 2113	(3)	**Total Hours**	**15**
Total Hours	**15**		
3rd YEAR			
MATH 3340	(3)	MATH 2150	(3)
ENGR 3210	(3)	ENGR 3220	(3)
AREA C (COMM 1100 *)	(3)	ECON 2105 or ECON 2106	(3)
GEOL 1121	(4)	(ENGL 3020 *)	(3)
KSPE 2000	(2)	AREA E	(3)
Total Hours	**15**	**Total Hours**	**15**

*COMM 1100 and ENGL 3020: recommended but not required
ECON 2105 (Macroeconomics) or ECON 2106 (Microeconomics) is acceptable for the economics requirement.

Other supported courses: CS 1302 (4 hours), MATH 3600 (3 hours).

Valdosta State University Engineering Studies Curriculum for Transfer to the Georgia Institute of Technology in Computer Engineering or Electrical Engineering

FALL SEMESTER	Hours	SPRING SEMESTER	Hours
1st YEAR			
MATH 1113	(3)	MATH 2261	(4)
CHEM 1211& 1211L	(4)	CS 1010	(3)
ENGR 2010	(2)	(ENGR 2500 *)	(3)
ENGL 1101	(3)	ENGL 1102	(3)
POLS 1101	(3)	HIST 2111 or 2112	(3)
Total Hours	**15**	**Total Hours**	**16**
2nd YEAR			
MATH 2262	(4)	MATH 2263	(4)
PHYS 2211	(4)	PHYS 2212	(4)
CS 1301	(4)	ENGR 2310	(4)
ENGL 2111, ENGL 2112,		AREA C (COMM 1100 *)	(3)
or ENGL 2113	(3)	**Total Hours**	**15**
Total Hours	**15**		
3rd YEAR			
MATH 3340	(3)	MATH 2150	(3)
ENGR 3320	(3)	ENGR 2200*	(3)
CS 1302	(4)	AREA D #	(4)
ECON 2105 or 2106	(3)	ENGR 2320	(3)
AREA E	(3)	KSPE 2000	(2)
Total Hours	**16**	**Total Hours**	**15**

*ENGR 2500, COMM 1100, ENGR 2200: recommended but not required.
ECON 2105 (Macroeconomics) or ECON 2106 (Microeconomics) is acceptable for the economics requirement.
Area D can be satisfied by BIOL 2010, CHEM 1212, or GEOL 1121.

Valdosta State University Engineering Studies Curriculum for Transfer to the Georgia Institute of Technology in Industrial Engineering

FALL SEMESTER	Hours	SPRING SEMESTER	Hours
1st YEAR			
MATH 1113	(3)	MATH 2261	(4)
AREA D #	(4)	CS 1010	(3)
ENGR 2010	(2)	ENGR 2500*	(3)
ENGL 1101	(3)	ENGL 1102	(3)
POLS 1101	(3)	HIST 2111 or HIST 2112	(3)
Total Hours	**15**	**Total Hours**	**16**
2nd YEAR			
MATH 2262	(4)	MATH 2263	(4)
PHYS 2211	(4)	PHYS 2212	(4)
CS 1301	(4)	CS 1302	(4)
ENGL 2111, ENGL 2112,		AREA C (COMM 1100 *)	(3)
or ENGL 2113	(3)	**Total Hours**	**15**
Total Hours	**15**		
3rd YEAR			
AREA D #	(4)	MATH 2150	(3)
PSYC 2500	(3)	ENGR 2200	(3)
ECON 2105	(3)	ECON 2106	(3)
MATH 3600	(3)	ENGL 3020	(3)
KSPE 2000	(2)	**Total Hours**	**15**
Total Hours	**12**		

ENGR 2500 and ENGL 3020*: recommended but not required.
Area D can be satisfied by two of these courses: CHEM 1211/1211L, CHEM 1212/1212L, BIOL 2010, and GEOL 1121.

Valdosta State University Engineering Studies Curriculum for Transfer to the Georgia Institute of Technology in Aerospace Engineering or Mechanical Engineering

FALL SEMESTER	Hours	SPRING SEMESTER	Hours
1st YEAR			
MATH 1113	(3)	MATH 2261	(4)
CHEM 1211 and 1211L	(4)	CS 1010	(3)
ENGR 2010	(2)	ENGR 2500	(3)
ENGL 1101	(3)	ENGL 1102	(3)
POLS 1101	(3)	HIST 2111 or HIST 2112	(3)
Total Hours	**15**	**Total Hours**	**16**
2nd YEAR			
MATH 2262	(4)	MATH 2263	(4)
PHYS 2211	(4)	PHYS 2212	(4)
CS 1301	(4)	ENGR 2200	(3)
ENGL 2110, ENGL 2120,		AREA C (COMM 1100 *)	(3)
or ENGL 2130	(3)	**Total Hours**	**15**
Total Hours	**14**		
3rd YEAR			
MATH 3340	(3)	MATH 2150	(3)
ENGR 3210	(3)	ENGR 3220	(3)
AREA D #	(4)	ECON 2105 or ECON 2106	(3)
AREA E	(3)	ENGL 3020	(3)
KSPE 2000	(2)	**Total hours**	**15**
Total Hours	**12**		

COMM 1100, ENGL 3020*: recommended but not required.
ECON 2105 (Macroeconomics) or ECON 2106 (Microeconomics) is acceptable for the economics requirement.
Other supporting courses: CS 1302 (4 hours), MATH 3600 (3 hours).
Area D can be satisfied by BIOL 2010, CHEM 1212/1212L, or GEOL 1121.

RECOMMENDED COURSES FOR THE MERCER UNIVERSITY TRANSFER PROGRAM

For All Majors (biomedical, computer, electrical, environmental, industrial, and mechanical engineering):

Core Curriculum Areas A - F:

same as Regents' Engineering Transfer Program Engineering Courses . . . . . 21 hours
ENGR 2010, 2200, 2500, 3210, 3220, 2310, 3320

Supporting Courses . . . . . 9 hours
COMM 1100, ENGL 3020, MATH 2150

RECOMMENDED COURSES FOR REGULAR TRANSFER TO THE UNIVERSITY OF GEORGIA

All Majors (agricultural engineering, biological engineering): Students should follow the recommended courses for Regents' Engineering Transfer Program, Mechanical Engineering.

DUAL DEGREE PROGRAM

The Dual Degree Program offers a student the opportunity to earn a Bachelor of Science degree from Valdosta State University and, in addition, a Bachelor of Science degree in engineering from the Georgia Institute of Technology within a total time period of approximately five years. Three-fourths of the Valdosta State University degree requirements are completed before transfer to the Georgia Institute of Technology (nominally three years), while the remaining Valdosta State University degree requirements and the remaining engineering degree requirements are completed at the Georgia Institute of Technology (nominally two years). The bachelor's degree from Valdosta State University may be awarded when the student has satisfied the degree requirements.

The major selected at Valdosta State University should be one that can easily incorporate the mathematics and science courses required in the first two years of the engineering field the student plans to enter, i.e., applied mathematics, computer science, physics, or chemistry. Other majors make the five-year time period unfeasible. The second degree at the Georgia Institute of Technology may be selected from any of the fields of engineering.

RECOMMENDED COURSES FOR THE DUAL-DEGREE PROGRAM

Major: See course requirements for VSU major. Students must complete at least 90 hours at VSU before transferring. See the Dual Degree Coordinator for additional requirements that must be satisfied before transferring.

Supporting Courses/Electives: Students take the following courses as they fit into the major requirements at VSU and the engineering requirements at Georgia Tech: ENGR 2010, 2200, 2310, 2500, 3210, 3220, 3320; MATH 2150, 3340.

The remaining 30 (or fewer) hours required for the VSU degree must be taken at Georgia Tech, to be accepted as transfer credit by VSU.