Parks College of Engineering and Aviation prepares students for careers in engineering, aviation, computer science and related fields. Satisfying this mission demands excellence in academic programs that integrate the education of the whole person, in the liberal and Jesuit traditions, with classroom and laboratory experiences in the major fields of study. A Parks College education provides opportunities for students to develop intellectually, stay abreast of changing technology, learn more about themselves and the world in which they live, and to prepare for a lifetime of learning.

The Aerospace Engineering, Mechanical Engineering and Electrical Engineering curricula are professionally accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering Technology (ABET). The Aircraft Maintenance Engineering, Aircraft Maintenance Management, Aviation Science/Professional Pilot, and Avionics Engineering curricula are accredited by the Council for Aviation Accreditation (CAA).

Special Admission Requirements
In addition to the general admission and matriculation requirements of the University, Parks College has the following additional requirements.

The recommended academic requirements for particular programs are as follows:

Bachelor of Science in Aeronautics:
- Avionics Engineering
- Bachelor of Science in Aerospace Engineering
- Bachelor of Science in Applied Computer Science
- Bachelor of Science in Biomedical Engineering
- Bachelor of Science in Computer Software Systems
- Bachelor of Science in Electrical Engineering
- Bachelor of Arts in Physics
- Bachelor of Science in Physics (pending approval)

1. Grade range B+ to A from high school or 2.70 college transfer average.
2. Fifteen units of high school work: three or four English; four or more Mathematics - Algebra I and II, Geometry, and Senior Mathematics with Trigonometry; three or four sciences - General Science or Introduction to Physical Science, Earth Science, Biology, Physics, or Chemistry; two or three Social Sciences - History, Psychology, or Sociology; and three electives.

Bachelor of Science in Aeronautics: Aircraft Maintenance Engineering
Bachelor of Science in Aeronautics: Aviation Science/Professional Pilot

1. Grade range B to A from high school or 2.50 college transfer average.
2. Fifteen units of high school work: three or four English; four or more Mathematics - Algebra I and II, Geometry, or Trigonometry; two sciences - General Science, Chemistry, Introduction to Physical Science, Earth Science or Physics; three Social Science - History, Psychology, or Sociology; and four electives.

Associate of Science in Aircraft Maintenance Engineering Technology
Associate of Science in Aircraft Maintenance Management Technology
Associate of Science in Avionics Engineering Technology

1. Grade range B- to A from high school or 2.00 college transfer average.
2. Fifteen units of high school work: three or four English; two Mathematics - Algebra and Geometry; two sciences - General Science, Physics, Chemistry or Physics; three Social Science - History, Psychology, or Sociology; and four electives.

Airframe and Powerplant Certificate Program:

1. Grade range C to A from high school or 2.00 college transfer average.
2. Fifteen units of high school work: three or four English; two Mathematics - General Mathematics, Algebra or Geometry; two sciences - General Science, Earth Science, Introduction to Physical Science, Chemistry or Physics; three Social Sciences - History, Psychology, or Sociology; and four electives.

Admission to Professional Pilot Program
Enrollment capacity in the Aviation Science/Professional Pilot program may be limited; therefore, early application is strongly encour-
1. The student must have approval of the instructor and department chair to sit in that particular class. A course taken for credit may be changed to an audit status until the last day to receive a grade of "W".

2. The student is eligible to take tests if he or she desires. However, they will not be graded.

3. No grade or credit can be earned by auditing a course and, although an "AU" grade is entered instead of the grades described elsewhere, the course does not count toward the degree.

4. An exemption examination cannot be taken for an audited course.

Registration at Another Educational Institution

Classified students at Parks may not register for courses at other educational institutions without prior written approval of the Dean of Parks College.

Flight Instruction at Other Institutions

Once a student has enrolled at Parks College, all subsequent flight instruction must be completed in residence at the College. Flight instruction outside of the College’s FAA-approved pilot instruction curricula is not permitted without prior written approval from the Chair of the Department of Aviation Science (whether currently enrolled or not). Students who receive flight instruction outside the approved curricula without prior approval are subject to dismissal from the Department of Aviation Science.

Flight Instruction Facilities

The College maintains a fleet of single-engine and twin-engine airplanes for flight instruction at the St. Louis Downtown-Parks Airport. Though it is an integral part of the Aviation Science/Professional Pilot curriculum, flight instruction is also offered (on a space available basis) at an additional cost for those students who desire to work toward pilot certificates and ratings.

Special Academic Requirements

Attendance

As a policy, undergraduate students are expected to attend regularly all classes, laboratory sessions and examinations. The implementation of this policy is left to the discretion of the individual instructor with the following exception: no absences are permitted in any course, which is
required for the Federal Aviation Administration (FAA), regulated Airframe and Powerplant Technician Certificate or pilot certification courses. FAA regulations specify the number of hours required in the approved programs. Students should contact the academic departments for details of these regulations.

If any absences occur, it is the student’s responsibility to make up the missed work. Since the student is expected to attend classes regularly, the instructor is not obligated in any way to provide make-up examinations or additional help on material covered when a student is absent.

When, in the judgment of the instructor, a student has accrued an excessive number of absences, the instructor will report this on the appropriate excessive absence form to the student and his/her advisor. This report is, in effect, a warning. Continued absences will result in a second report, if in order, and a grade of “AF” (failure due to excessive absence) will be given.

When a student is absent because of an authorized student activity, the instructor, providing that the faculty member directing such student activities secures prior approval from the Dean’s office, may excuse the absence. Any scholastic difficulties resulting from the absence, as well as any assignments and examinations, remain the student’s responsibility.

### Academic Categories

**Unclassified**

Anyone who does not pursue a program of studies designed to obtain a degree at Parks College, but who enrolls in one or more classes, will be considered an unclassified student. Unclassified students who subsequently decide to pursue a degree must complete the entire process of applying for admission and must be admitted under the usual guidelines and procedures.

**Students in Good Academic Standing**

Anyone officially admitted in good standing into a degree program at Parks College and who is not in one of the categories of probation or suspension described below is considered to be a student in good academic standing. Such students are classified as part-time if enrolled for less than twelve hours, full-time if enrolled for between twelve and eighteen credit hours, and full-time on overload if enrolled for more than eighteen credit hours. Each student in good academic standing is assigned an academic advisor, a faculty member who should be consulted about any academic problems and who must approve all proposed course enrollments and withdrawals.

**Students on Assistance Status**

Minimum satisfactory scholastic achievement at Parks College is represented by a 2.00 cumulative grade point average (a C average). Anyone whose current or term grade point average is below 2.00 will be considered on assistance status (probation to their advisor) during the term in which they next attend Parks College. Such a student should be aware that:

1. They may not hold office in any student organization during the period of probation.
2. They will ordinarily be restricted to no more than 15 credit hours, although in exceptional cases their academic advisor may allow them to enroll for a greater academic load.

**Students on Supervisory Status**

Anyone whose overall grade point average is below 2.00 and is not on contract status (see below) will be considered on supervisory status (probation) to the Academic Board. Such students must see the Academic Board during regular registration. The Academic Board will inform them that:

1. They may not hold office in any student organization during the period of probation.
2. They will ordinarily be restricted to no more than 15 credit hours, although in exceptional cases the Academic Board is empowered to allow them to enroll for a greater academic load.
3. After receiving their mid-term grades, they must consult with their advisor as to their academic performance and they must meet with an Academic Board member with their mid-term grades and their records.
4. Unless there is substantial improvement in academic performance, students may be placed on Contract Status or dismissed from Parks College.

The preregistration of students on supervisory status cancelled if the student fails to see a member of the Academic Board prior to the third day of class of next term of enrollment. These students should see their advisor and the Academic Board during regular registration. Students who have not registered and attended classes within the first three days of the semester will not be allowed to enroll.

**Students on Contract Status**

A credit point deficiency is the additional number of credit points that must be added to a student’s present number of credit points to bring the overall grade point average to 2.00. Anyone whose credit point deficiency exceeds that given in the table below will be considered on contract status.

### TABLE I. ALLOWABLE DEFICIENCIES

#### A. BACCALAUREATE DEGREE PROGRAM

<table>
<thead>
<tr>
<th>Total Number of Credit Hours Earned Toward Degree(Includes Transfer)</th>
<th>Max. Allowable Deficiency Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-69</td>
<td>12</td>
</tr>
<tr>
<td>70-79</td>
<td>11</td>
</tr>
<tr>
<td>80-89</td>
<td>10</td>
</tr>
<tr>
<td>90-99</td>
<td>9</td>
</tr>
<tr>
<td>100-109</td>
<td>8</td>
</tr>
<tr>
<td>110-119</td>
<td>7</td>
</tr>
<tr>
<td>120-up</td>
<td>6</td>
</tr>
</tbody>
</table>

#### B. ASSOCIATE DEGREE PROGRAM

| 0-49 .......... | 12 |
| 50-59 .......... | 10 |
| 60-69 .......... | 8  |
| 70-up .......... | 6  |

#### C. AIRFRAME AND POWERPLANT CERTIFICATE PROGRAM

| 0-40 .......... | 12 |
| 41-48 .......... | 10 |
| 49-57 .......... | 8  |
| 58-up .......... | 6  |

Students on contract status must see the Academic Board during regular registration. The Board will require each student to sign a contract stating that he or she will decrease the credit point deficiency by a fixed amount (to be determined by the Academic Board, in consideration of the table above and the current credit point deficiency), and acknowledging that failure to satisfy this contract can result in dismissal from Parks College.

The preregistration of students on supervisory status cancelled if the student fails to see a member of the Academic Board prior to the third day of class of next term of enrollment. These students should see their advisor and the Academic Board during regular registration. Students who have not registered and attended classes within the first three days of the semester will not be allowed to enroll.

**Dismissed Students**

Any student on contract status who does not satisfy the contract he or she signed with the Academic Board can be dismissed from Parks
College. In addition, any student who fails a course three times can be dismissed and can no longer attend Parks College.

Appeal Options for Dismissed Students
A dismissed student may attempt to again attend Parks College by appealing to the Dean or to the Academic Board. Information regarding this appeal may be obtained from the Dean's office.

Parks College Core Curriculum
All students in degree programs leading to Bachelor of Science degrees must complete the Parks College Core Curriculum requirements. This curriculum is designed to ensure that a student experiences courses which:

1. Provide competence in the basic literacy of modern life, including reading, writing, speaking, and computing.
2. Provide a means for students to examine the human condition and reflect on its meaning through the study of science and technology, philosophy, theology, and the humanities.
3. Provide students an educational environment, which promotes critical thinking and stimulates the imagination.
4. Provide students the opportunity to explore ways in which they can live more fully and peacefully and act responsibly in a culturally diverse world.

Notice to students:
Degree programs may require specific courses in order to satisfy these requirements. It is recommended that students consult their advisors for guidance in choosing core curriculum courses. Subjects, which are accompanied by superscripts, are restricted to those, which are listed at the end of these requirements.

Philosophy and Theology (6 hours)
PL A105: Historical Introduction to Philosophy (3) or PL A205: Ethics (3)
TH A100: Theological Foundations (3)

Tools of Communication (4-6 hours)
ENG A192: Advanced Writing for Professionals (3)
CMM A120: Introduction to Public Speaking (3) or CMM A293: Small Group Presentation (1)

Science and Technology (7 hours)
Two lecture courses (3 each) and one laboratory course (1).
Choose from Astronomy, Biology, Chemistry, Engineering Sciences, Geology, Meteorology, and Physics.

Mathematics (5 hours)
Courses at a level of MT-A114: Algebra or higher

Computer Science (3 hours)
CS P125: Introduction to Computer Science

Social and Behavioral Sciences (3 hours)
A course in Anthropology, Communications, Communication Disorders, Economics, Education, Political Science, Psychology, Sociology, Social Work, or Public Policy Studies.

Humanities (3 hours)
Courses in the Fine Arts, Literature, History, or Foreign Language.

General Electives (3 hours)
An additional course from Philosophy and Theology, Social and Behavioral Sciences, or Humanities

Cultural Diversity (3 hours)
Courses specified for the same requirement by the College of Arts and Sciences will satisfy this requirement, as will certain additional courses offered by Parks College. The complete list of courses may be obtained from the Dean’s Office at Parks College. For some majors the Cultural Diversity requirement may be met by a course, which also satisfies another Parks College Core Curriculum requirement. Students should consult their advisor.

Specific courses that meet the core curriculum requirements for subjects, which are accompanied by superscripts above:

- Communication courses include: CMM A100, CMM A200, CMM A280
- Communication Disorders courses include: CD 1100, CD 1254, CD 1470
- Education courses include: ED F1304, ED F1305, ED F1423, ED F1470, ED H220-204, ED H420, ED H462, ED S431
- Social Work courses include: SW S100, SW S225, SW S302, SW S325
- Social Policy courses are excluded
- Fine Arts courses include: ARTS A100, ARHA A100, MUSA A100, TH RA A100, ARHA A111, CMM A140 and Art History courses
- Literature courses include: ENG A200 to 260, ENG A300 to 395, ENG A410 to ENG A479, ENGA 485 to ENGA 489
- Students in degree programs that are accredited by the Accreditation Board for Engineering Technology (ABET) must complete the foreign language requirement with languages other than English or the student’s native language.

Aerospace & Mechanical Engineering

Krishnaswamy Ravindra, Ph.D., P.E., Chair

Faculty:
Richard M. Andres, Ph.D., P.E., Professor Emeritus
Mir Atiqullah, Ph.D.
Patricia A. Benoy, Ph.D.
Lawrence G. Boyer, M.S.
Sridhar Condoor, Ph.D.
Paul A. Czyzys, B.S., Oliver L. Parks Endowed Chair
Marty A. Ferman, Ph.D., P.E., Director of Master's Program
John A. George, Ph.D.
Swami N. Karunamoorthy, D.Sc., Program Director, Mechanical Engineering
Amy Lang, Ph.D., David Manor, Ph.D.
Belal L. Nagabhushan, Ph.D.
Ray N. Nitzsche, Ph.D., P.E.
Krishnaswamy Ravindra, Ph.D., P.E.

Aerospace Engineering (B.S.)

The Aerospace Engineering program has as its objectives: 1. To prepare the students as Aerospace Engineers for Industry and Higher Education. 2. Proficiency in Analysis, Design and Development of Aerospace Vehicles. 3. Proficiency in Structures, Aerodynamics, Propulsion, Stability & Control, Astrodynamics and Design. 4. Proficiency in both analytical and experimental evaluation of flight vehicles. 5. Proficiency in written and oral communication skills. 6. Ability to engage in lifelong learning. Recognition that engineers are problem solvers is provided by instilling knowledge and skills necessary to identify problems and initiate a creative problem solving process. To this end, the design process, as exemplified by the assignment of open-ended problems, is experienced in nearly all engineering science courses. The design experience is developed throughout the program by introduction of problem identifying and solving tasks that are assigned in those courses that precede the two semester capstone design course. The student is instilled with an awareness of the impact of design decisions, not only on vehicle performance, but on society as well. Every effort is made to establish in each graduate, the incentives to pursue the learning process throughout his or her career. Excellent laboratories emphasize measurements and experimental methods.

With a solid core of mechanics, thermal/fluids, electrical/electronics, and controls, the student is able to progress to the discipline specific
1. To prepare the students as Mechanical Engineers for Industry and Higher Education. The Mechanical Engineering program has as its objectives:

2. Proficiency in Design and Manufacturing of Mechanical Systems.
3. Proficiency in both Structures and Thermal aspects of Mechanical Systems.
4. Proficiency in both analytical and experimental evaluation of Mechanical Systems.
5. Proficiency in written and oral communication skills.
6. Ability to engage in life long learning.

The Mechanical Engineering curriculum emphasizes Design and Manufacturing, which are the two most important functions of an engineer. Design is well integrated into all levels of the curriculum. An attempt is made to solicit industry sponsored projects for the cornerstone senior design course. In addition to basic science, mathematics, and engineering science courses, the curriculum includes courses in both the energy stem and the structures & motion stem. The humanities courses, including Engineering Ethics, provide a well rounded engineering education. Since modern mechanical systems are controlled by electronic systems, a course on Principles of Mechatronics has been included to provide the necessary interdisciplinary experience. The technical electives in the curriculum allow the student to specialize in either the energy stem, the structures & motion stem or the electronics & computer science area. Designing and developing high speed transportation (cars, trains, ships, planes), automated manufacturing, rapid prototyping, advanced robots, energy efficient devices, alternate energy sources, smart materials, and artificial devices for humans are some of the future challenges for a mechanical engineer. This curriculum provides the necessary building blocks and prepares the student to be a part of this future. The undergraduate curriculum is professionally accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Students are encouraged to participate in the activities of the student chapter of the American Society of Mechanical Engineers (ASME) and to enter the regional and national technical paper and design competition conducted by the ASME.

Typical Course of Study

First Semester          Second Semester

FRESHMAN
CH-A161 ................. 4  CS-P125 ................. 4
ENG-A192 ............... 3  ES-P102 ............... 2
ES-P101 ............... 2  MT-A153 ............... 4
MT-A152 ............... 4  PH-P161 ............... 4
HUMANITIES ........... 3  PH-P162 ............... 1
                  16  TH-A100 ............... 3
                  18

SOPHOMORE
CMM-P293 .......... 1  AE-P200 ............... 3
ES-P210 ............... 3  EE-P201 ............... 4
MT-A254 ............... 4  EE-P202 ............... 1
PH-P163 ............... 4  ES-P211 ............... 3
PH-P164 ............... 1  ES-P220 ............... 3
Soc/Behavior Sci ...... 3  MT-A354 ............... 3
                  16
                  17

JUNIOR
AE-P320 ............... 3  AE-P310 ............... 3
ES-P310 ............... 4  AE-P330 ............... 3
ES-P311 ............... 1  AE-P321 ............... 3
ES-P322 ............... 3  ES-P330 ............... 3
MT-A370 ............... 3  PL-A205 ............... 3
AE-P322 ............... 3  15
                  16

SENIOR
AE-P411 ............... 2  AE-P451 ............... 3
AE-P410 ............... 3  AE-P426 ............... 3
AE-P430 ............... 4  Cultural Diversity ........ 3
AE-P450 ............... 3  Tech. Elective ........ 3
AE-P430 ............... 3  Tech. Elective ........ 3
PL-A340 ............... 3  15
                  18

Total credit hours: 131

A list of courses approved as Technical Electives may be obtained from the department chair.

Mechanical Engineering (B.S.)

The Mechanical Engineering program has as its objectives:
1. To prepare the students as Mechanical Engineers for Industry and Higher Education.
Aerospace Technology

Alan J. Stolzer, M.S., Interim Chair

Faculty:
Aaron Cowin, M.S.
John D. Crenn, M.S.
Thomas W. Dahlmann, A.S.
Melvin A. Doehoff, A.S.
Ashley S. How, A&P Certificate
Ben Humphrey, B.S.
Richard W. Kannc, M.S.
Terrence K. Kelly, B.S.
Armineh Kahlil, M.S.
Stephen G. Magic, M.B.A.
Robert E. McLean, A.S.
Frederic C. Schneeberger, B.A.
Beshara I. Sholy, M.S.

The principal objective of the Department of Aerospace Technology is to prepare the student for a career in aircraft maintenance or a support discipline, which requires knowledge of aircraft maintenance principles and procedures. The curricula also provide essential skills for employment opportunities in related career fields.

Aircraft Maintenance/Avionics

The department offers the Bachelor of Science in Aeronautics with a concentration in Aircraft Maintenance Engineering, Bachelor of Science in Aeronautics with a concentration in Aircraft Maintenance Management, and a Bachelor of Science in Aeronautics with a concentration in Avionics Engineering. The Associate of Science is awarded in Aircraft Maintenance Engineering, Aircraft Maintenance Management, and Avionics Engineering Technology. The aircraft maintenance education, which leads to the Federal Aviation Administration Airframe and Powerplant certificate, is common to both the AME and AMM programs as well as to the Associate of Science programs.

The Avionics professional is responsible for both development and maintenance of aircraft navigation, communication, and control systems. A summer avionics program leading to a certificate is offered for aircraft maintenance students. The avionics studies can lead to the attainment of the Federal Communications Commission General Radiotelephone license.

The Aircraft Maintenance Engineering, Aircraft Maintenance Management, and Avionics Engineering curricula are professionally accredited by the Council for Aviation Accreditation (CAA).

Aircraft Maintenance Engineering (B.S.)

The Aircraft Maintenance Engineering curriculum places heavy emphasis on the study of actual aircraft systems, instruments and powerplants. Basic aerospace engineering subjects are followed by applied courses in structures, aerodynamics, design, strength of materials and fluid mechanics. With the degree, the graduate is prepared for rewarding career opportunities in many areas of aeronautics, including flight test engineering, production engineering and maintainability. The FAA Airframe and Powerplant Certificate may be earned by all graduates.

Typical Course of Study

First Semester Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AME-P105</td>
<td>3</td>
<td>AME-P104</td>
<td>2</td>
</tr>
<tr>
<td>AME-P115</td>
<td>3</td>
<td>AME-P208</td>
<td>3</td>
</tr>
<tr>
<td>AME-P210</td>
<td>4</td>
<td>AME-P214</td>
<td>4</td>
</tr>
<tr>
<td>AME-P228</td>
<td>2</td>
<td>MT-A143</td>
<td>4</td>
</tr>
<tr>
<td>AS-P100</td>
<td>2</td>
<td>PH-P131</td>
<td>3</td>
</tr>
<tr>
<td>*MT-A142</td>
<td>4</td>
<td>PH-P132</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOPHOMORE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AME-P103</td>
<td>2</td>
<td>AME-P229</td>
<td>2</td>
</tr>
<tr>
<td>AME-P207</td>
<td>4</td>
<td>AME-P311</td>
<td>4</td>
</tr>
<tr>
<td>AME-P209</td>
<td>4</td>
<td>AME-P313</td>
<td>4</td>
</tr>
<tr>
<td>AVN-P201</td>
<td>3</td>
<td>AME-P317</td>
<td>3</td>
</tr>
<tr>
<td>AVN-P202</td>
<td>.1</td>
<td>AVN-P301</td>
<td>.3</td>
</tr>
<tr>
<td>MT-A244</td>
<td>4</td>
<td>AVN-P302</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>JUNIOR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AE-P200</td>
<td>3</td>
<td>CH-A151</td>
<td>3</td>
</tr>
<tr>
<td>AME-P316</td>
<td>4</td>
<td>CH-A152</td>
<td>1</td>
</tr>
<tr>
<td>AME-P401</td>
<td>4</td>
<td>CS-P125</td>
<td>4</td>
</tr>
<tr>
<td>AME-P403</td>
<td>1</td>
<td>**ENG-A192</td>
<td>3</td>
</tr>
<tr>
<td>ES-P200</td>
<td>4</td>
<td>ES-P303</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Elective: Soc/Beh Sci</td>
<td>.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>SENIOR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AE-P320</td>
<td>3</td>
<td>AE-P302</td>
<td>4</td>
</tr>
<tr>
<td>AM-P405</td>
<td>3</td>
<td>CMM-A293</td>
<td>1</td>
</tr>
<tr>
<td>Elective: General</td>
<td>3</td>
<td>Elective: Humanities</td>
<td>3</td>
</tr>
<tr>
<td>ES-P310</td>
<td>3</td>
<td>ES-P320</td>
<td>3</td>
</tr>
<tr>
<td>ES-P311</td>
<td>1</td>
<td>PL-A-205</td>
<td>3</td>
</tr>
<tr>
<td>TH-A100</td>
<td>3</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total credits required: 133

Students without transfer credit for MT-A117 Algebra and Trigonometry or MT-A118 College Algebra and MT-A141 Pre-Calculus must pass a proficiency examination before enrolling in MT-A142 Calculus I.

Students needing prerequisite skills in writing are required to take ENG-A150: The Process of Communication (3) and perhaps ENG-A090 Introductory Writing or ENGA094 Introduction to College Reading (offered as Pass/Fail).

A list of approved elective courses may be obtained from the Chair of Aerospace Technology.

Aircraft Maintenance Engineering Technology (A.S.)

The Parks College Aircraft Maintenance Engineering Technology curriculum places major emphasis on the study of actual aircraft, instruments and powerplants, including laboratory work stressing application of theory. Students completing this program may earn the FAA Airframe and Powerplant Certificate. Aircraft manufacturers, airlines and fixed base operations are among the employers of these graduates. Graduates of this program may continue their education toward a Bachelor of Science degree.
Typical Course of Study

First Semester    
FRESHMAN
AME-P102         3  
AME-P105         3  
AME-P115         3  
AME-P210         4  
AME-P228         2  
MT -A120         3     18

SOPHOMORE
AME-P103         2  
AME-P207         4  
AME-P311         4  
AME-P317         3  
PH -P135         4     17  

JUNIOR
CH -A151         3  
CH -A152         1  
ENG-A150         3  
MT -A132         3  
PSY-A101         3     13

MT-A120         3     18

Total Credits Hours: 97

A list of approved elective courses may be obtained from the Chair of the Department of Aerospace Technology.

Aircraft Maintenance Management Technology (B.S.)

The Aircraft Maintenance Management Technology program at Parks College prepares graduates for careers as qualified maintenance technicians, who are also educated in business and management skills. Graduates of this program are qualified to provide technical guidance for general maintenance, overhaul, repair and modification of aircraft. They are also qualified for first level supervisory positions leading to management roles with airlines, aircraft manufacturers and fixed base operations. Graduates of this program may earn FAA Airframe and Powerplant Certificate. Students may continue their studies and earn the Bachelor of Science degree in Aircraft Maintenance Management.

Typical Course of Study

First Semester    
FRESHMAN
AME-P102         3  
AME-P105         3  
AME-P115         3  
AME-P210         4  
AME-P228         2  
AS -P100         2     17

SOPHOMORE
AME-P103         2  
AME-P207         4  
AME-P311         4  
AME-P317         3  
PH -P135         4     17  

JUNIOR
ENG-A150         3  
ECN-B190         3  
MGT-B300         3  
MT -A132         3     15

Total Credit Hours: 99

A list of approved elective courses may be obtained from the Chair of the Department of Aerospace Technology.
Airframe and Powerplant Technician  
(Certificate Program)  
The purpose of the Federal Aviation Administration approved Airframe and Powerplant Technician Program at Parks College is to prepare students for careers as airframe and powerplant technicians with airlines, fixed base operators or aircraft manufacturers.

Typical Course of Study

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRESHMAN</strong></td>
<td></td>
</tr>
<tr>
<td>AME-P102 ..........................3</td>
<td>AME-P207 ............4</td>
</tr>
<tr>
<td>AME-P105 ..........................3</td>
<td>AME-P208 ............3</td>
</tr>
<tr>
<td>AME-P115 ..........................3</td>
<td>AME-P209 ............4</td>
</tr>
<tr>
<td>AME-P210 ..........................4</td>
<td>AME-P214 ............4</td>
</tr>
<tr>
<td>AME-P228 ..........................2</td>
<td>MT -A115 ............3</td>
</tr>
<tr>
<td>MT -A114 ..........................3</td>
<td>18</td>
</tr>
<tr>
<td>Total Credit Hours:</td>
<td>69</td>
</tr>
</tbody>
</table>

The Avionics Option for Airframe and Powerplant program consists of additional courses, AVN-P131, 132, 133, 134 to be taken during the summer session.

Any transfer student holding an FAA Airframe and Powerplant Certificate may receive 59 hours toward a degree in Aircraft Maintenance Management. A student may receive 56 hours toward a degree in Aircraft Maintenance Engineering, and an additional three hours if an exemption exam in Introduction to Aeronautics and Astronautics is successfully passed.

Avionics Engineering

Avionics (aviation electronics) encompasses the study of specialized electronics engineering as applied to aeronautical and aerospace systems. The avionics curriculum provides an intensive educational experience to students interested in civil and military aviation electronics engineering. The department offers the following undergraduate degrees:

Avionics Engineering (B.S. in Aeronautics)
The degree program consists of a core of general studies, mathematics, and science, as well as a study of the theories of engineering electronics. Students enrolled in this degree program should complete the outlined schedule; 127 credit hours are needed to earn the B. S. degree.

Typical course of study

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRESHMAN</strong></td>
<td></td>
</tr>
<tr>
<td>AME-P104 ..........................2</td>
<td>AVN-P205 ............3</td>
</tr>
<tr>
<td>AME-P105 ..........................3</td>
<td>AVN-P206 ............1</td>
</tr>
<tr>
<td>AS -P100 ..........................2</td>
<td>**ENG-A192 ..........3</td>
</tr>
<tr>
<td>AVN-P100 ..........................1</td>
<td>MT -A153 ............4</td>
</tr>
<tr>
<td>AVN-P105 ..........................3</td>
<td>CH -A151 ............3</td>
</tr>
<tr>
<td>AVN-P106 ..........................1</td>
<td>CH -A152 ............1</td>
</tr>
<tr>
<td>*MT -A152 ..........................4</td>
<td>15</td>
</tr>
</tbody>
</table>

Avionics Engineering Technology  
(A. S. in Aeronautics)  
The associate degree program prepares students for careers as qualified avionics technicians. Graduates are qualified to provide technical assistance and perform repairs and maintenance of aircraft communication and navigation equipment. The FCC General Radio-Telephone Operator License may be earned by all graduates.

Typical course of study

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRESHMAN</strong></td>
<td></td>
</tr>
<tr>
<td>AME-P105 ..........................3</td>
<td>AVN-P205 ............3</td>
</tr>
<tr>
<td>AS -P100 ..........................2</td>
<td>AVN-P206 ............1</td>
</tr>
<tr>
<td>AVN-P100 ..........................1</td>
<td>**ENG-A192 ..........3</td>
</tr>
<tr>
<td>AVN-P105 ..........................3</td>
<td>MT -A143 ............4</td>
</tr>
</tbody>
</table>
Students in the Aviation Science/Professional Pilot degree program may choose to complete a selected group of courses and receive a Certificate in Business Administration in addition to the bachelor's degree.

Aviation Science/Professional Pilot (ASPP) (B.S.)

Typical Course of Study

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRESHMAN</td>
<td></td>
</tr>
<tr>
<td>AS-P100</td>
<td>AS-P150</td>
</tr>
<tr>
<td>EAS-A107</td>
<td>CMM-A120</td>
</tr>
<tr>
<td>ENG-A150</td>
<td>MT-A115</td>
</tr>
<tr>
<td>MT-A120</td>
<td>MIS-B200</td>
</tr>
<tr>
<td>PP-P150</td>
<td>TH-A100</td>
</tr>
<tr>
<td>PP-P151</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOPHOMORE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AME-P219</td>
<td>ACC-B220</td>
</tr>
<tr>
<td>MT-A132</td>
<td>AE-P102</td>
</tr>
<tr>
<td>PH-P135</td>
<td>AME-P219</td>
</tr>
<tr>
<td>PP-P200</td>
<td>PP-P250</td>
</tr>
<tr>
<td>PP-P201</td>
<td>PP-P251</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JUNIOR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AS-P300</td>
<td>AS-P350</td>
</tr>
<tr>
<td>DSC-B207</td>
<td>ENG-A203</td>
</tr>
<tr>
<td>ECN-B190</td>
<td>MGT-B300</td>
</tr>
<tr>
<td>ENG-A192</td>
<td>PL-A105</td>
</tr>
<tr>
<td>PP-P301</td>
<td>Cult. Diversity Elect</td>
</tr>
<tr>
<td>PSY-A101</td>
<td>Technical Elective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SENIOR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-P405</td>
<td>AM-P440</td>
</tr>
<tr>
<td>AS-P410</td>
<td>AS-P450</td>
</tr>
<tr>
<td>AS-P420</td>
<td>Technical Elective</td>
</tr>
<tr>
<td>AS-P430</td>
<td>Open Elective</td>
</tr>
<tr>
<td>PL-A205</td>
<td>Open Elective</td>
</tr>
<tr>
<td>Open Elective</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 127

Aviation Management (AM) (B.S.)

Typical Course of Study

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRESHMAN</td>
<td></td>
</tr>
<tr>
<td>AS-P100</td>
<td>AS-P150</td>
</tr>
<tr>
<td>ENG-A150</td>
<td>CMM-A120</td>
</tr>
<tr>
<td>EAS-A107</td>
<td>MT-A115</td>
</tr>
<tr>
<td>MIS-B200</td>
<td>PP-P150</td>
</tr>
<tr>
<td>MT-A120</td>
<td>TH-A100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOPHOMORE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Biomedical Engineering (B.S.)

The Department of Biomedical Engineering (BME) originated in 1997 with an undergraduate degree program that combines math, chemistry, and physics, as well as biology-physics to form a unique engineering discipline. The first two years build a strong foundation of basic sciences and liberal arts, with introductory engineering. In the next two years, courses and labs build on the basic sciences and math to provide a focus of integrative courses in Biomedical Engineering supplemented with courses from other engineering departments. The BME courses span a range of subspecialties, including biomechanics, biomaterials, bioelectronics, biofluids, and transport. Within these courses, topics may address problems in areas like cardiology, orthopedics, neurobiology, biology, or psychology. The choice of electives and the topic of the Senior Project define the specialty or focus for each individual student. Students may experience research and courses in several labs, but the Senior Project focuses on a specific year-long problem that may be done individually or in teams.

The undergraduate degree program provides training that prepares graduates for a variety of options. Many graduates will go to graduate schools in BME or related areas. Many will accept industrial positions in large or small businesses. Others will choose professional schools. The curriculum is designed with sufficient flexibility to accommodate these options. For example, a student may prepare for medical school by including the necessary courses in organic chemistry.

Course of Study:
The Biomedical Engineering curriculum satisfies the SLU and Parks College requirements, and includes the flexibility, through electives, to tailor the curriculum for each individual student. The minimum curriculum includes:

Chemistry .................................................. 8
Basic Science & Math

Biomedical Engineering

Charles C. Kirkpatrick, Pd.D, Interim Chair

Faculty:
Gary Bledsoe, PhD
Cecil W. Thomas, PhD
Becky K. Willits, PhD

Biomedical Engineering (B.S.)

The Department of Biomedical Engineering (BME) originated in 1997 with an undergraduate degree program that combines math, chemistry, and physics, as well as biology-physics to form a unique engineering discipline. The first two years build a strong foundation of basic sciences and liberal arts, with introductory engineering. In the next two years, courses and labs build on the basic sciences and math to provide a focus of integrative courses in Biomedical Engineering supplemented with courses from other engineering departments. The BME courses span a range of subspecialties, including biomechanics, biomaterials, bioelectronics, biofluids, and transport. Within these courses, topics may address problems in areas like cardiology, orthopedics, neurobiology, biology, or psychology. The choice of electives and the topic of the Senior Project define the specialty or focus for each individual student. Students may experience research and courses in several labs, but the Senior Project focuses on a specific year-long problem that may be done individually or in teams.

The undergraduate degree program provides training that prepares graduates for a variety of options. Many graduates will go to graduate schools in BME or related areas. Many will accept industrial positions in large or small businesses. Others will choose professional schools. The curriculum is designed with sufficient flexibility to accommodate these options. For example, a student may prepare for medical school by including the necessary courses in organic chemistry.

Course of Study:
The Biomedical Engineering curriculum satisfies the SLU and Parks College requirements, and includes the flexibility, through electives, to tailor the curriculum for each individual student. The minimum curriculum includes:

Basic Science & Math

Chemistry .................................................. 8

Computer Science

Asai Asaithambi, Ph.d., Chair

Faculty:
Salahuddin Ahmed, Ph.D.
Asai Asaithambi, Ph.D.
Stephen A. Blythe, Ph. D.
Jacob Sukhodolsky, Ph.D.
Ventzeneslav Valev, Ph.D.

The Department of Computer Science offers two Bachelor of Science degrees: Applied Computer Science and Computer Software Systems.

Composition of the Major Programs:

Both majors will require 122 credit hours, consisting of the following:

Computer Science Core: .................................... 33 credit hours

Advanced Biomedical Engineering ........................... 12

in areas of:
- biomaterials - tissue engineering
- biomechanics - biofluids
- biosensors - instrumentation
- biocomputing - signals - imaging

Open Electives ........................................... 6
options approved by BME Department
College/University Core: .......................... 22 credit hours  
Science/Mathematics courses: ....................... 20 credit hours  
Allied Electives: .................................. 15 credit hours  
Open Electives: .................................... 12 credit hours  
Concentration Courses: ............................. 9 credit hours  
Computer Science Electives: ........................ 6 credit hours  
Engineering courses: ............................... 5 credit hours

The Computer Science Core:  
The Computer Science core for both majors will consist of the following courses:

1. Elementary Discrete Structures CS-P115 ........... 2 credit hours  
2. Introduction to Computer Science CS-P125 ........... 4 credit hours  
3. Advanced Discrete Structures CS-P215 ............ 3 credit hours  
4. Data Structures CS-P225 ........................... 3 credit hours  
5. Computer Architecture & Org. I CS-P230 ........... 3 credit hours  
6. Adv. Data Structures and Algorithms CS-P245 ....... 3 credit hours  
7. Software Engineering CS-P270 ...................... 3 credit hours  
8. Database Systems CS-P340 ......................... 3 credit hours  
9. Senior Design Project CS-P490 ...................... 3 credit hours

Two courses from:  
10. Design and Analysis of Algorithms CS-P315 ........ 3 credit hours  
11. Numerical Methods CS-P320 ........................ 3 credit hours  
12. Combinatorial Algorithms CS-P325 ............... 3 credit hours

The College/University Core:  
The following courses are required as part of the College/University Core courses for both majors:

1. Adv. Writing for Professional ENG-A192 .............. 3 credit hours  
2. Small Group Presentations CMM-A293 ............... 1 credit hour  
3. Theological Studies TH-A100 ......................... 3 credit hours  
4. Intro. to the History of Philosophy PL-A105 .......... 3 credit hours  
5. Ethics PL-A205 .................................... 3 credit hours  
6. Humanities Elective ................................ 3 credit hours  
7. Social/Behavioral Sciences Elective ................... 3 credit hours  
8. Cultural Diversity Elective ........................... 3 credit hours

Science and Mathematics Requirements:  
The Science and Mathematics requirements for both majors will be as follows:

1. One-year sequence of introductory courses in Biology, Chemistry, or Physics, each with a lab .............. 8 credit hours  
2. An additional science course with lab 4 credit hours  
3. Calculus I-II ...................................... 8 credit hours

Allied Electives:  
Allied Electives must be chosen from an approved sequence of courses in a single discipline or related to a single topic.

The following course sequences are suggested as Allied Electives for the Applied Computer Science major:

1. Mathematics. MT-A254/MT-A244, MT-A266, MT-A315, MT-A351, MT-A352  
2. Physics. PH-P151-2, PH-P153-4, PH-P261-2, PH-P301  
3. Electrical Engineering/Physics. PH-P151-2, EE-P210, EE-P211-2, EE-P405-6  

Other: Any other sequence of courses totaling 15 credit hours, approved by the department

The following course sequences are suggested as Allied Electives for the Computer Software Systems major:

2. Mgmt/Comm. MGT-B300, MGT-B312, CMM-A100, CMM-A120, CMM-A323

3. Communications. CMM-A100, CMM-A200, CMM-A280, CMM-A320, CMM-A480  
5. Other: Any other sequence of courses totaling 15 credit hours, approved by the department

Open Electives:  
Open electives can be courses from the humanities, social and behavioral sciences, cultural diversity electives, computer science, engineering, or sciences. Any CS-P course, numbered 250 or higher in computer science will qualify as a computer science elective.

Concentration Courses:  
Each major will require three concentration courses in Computer Science.  
The concentration courses for the Applied Computer Science major will be:

1. Theory of Programming Languages CS-P310 ........ 3 credit hours  
2. Computer Architecture & Org. II CS-P330 ........ 3 credit hours  
3. Data Comm. & Networking CS-P335 3 credit hours

The concentration courses for the Computer Software Systems major will be:

1. Software Analysis & Design CS-P360 ............... 3 credit hours  
2. Software Quality CS-P365 ........................ 3 credit hours  
3. Software Project Management CS-P370 ............. 3 credit hours

Computer Science Electives:  
For both majors, 6 hours of coursework in CS-P courses numbered 250 or higher (outside of the Computer Science core, Theory, and Concentration courses) will be required.

Engineering Courses:  
For both majors, the following Engineering courses are required:

1. Freshman Engineerin ES-P101 ....................... 1 credit hour  
2. Digital Systems EE-P205 ......................... 3 credit hours  
3. Digital Systems Laboratory EE-P206 ............... 1 credit hour

Departmental Practice and Policies:  
A list of Computer Science electives available each semester may be obtained from the Chair of the Department of Computer Science. Normally, a student and his/her advisor will prepare and present the student’s proposed schedule of courses to the Chair of the Department of Computer Science for approval during the student’s fourth semester of study. Students must pay attention to the following departmental policies:

1. D grades are not acceptable in Computer Science core courses and Computer Science minor courses.  
2. Not more than one D grade is acceptable in the Mathematics and Science courses required for graduation.  
3. Not more than one D grade is acceptable in Computer Science Electives and Allied Electives.

Minor in Computer Science  
CS-P115, CS-P125, CS-P225, CS-P245, and two additional upper division Computer Science courses (CS-P3xx or CS-P4xx) will constitute a minor in Computer Science.  
Typical Course of Study (for both majors)

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRESHMAN</td>
<td></td>
</tr>
<tr>
<td>CS P115</td>
<td>2</td>
</tr>
<tr>
<td>CS P120</td>
<td>4</td>
</tr>
<tr>
<td>ENGA192</td>
<td>3</td>
</tr>
<tr>
<td>ES P101</td>
<td>1</td>
</tr>
<tr>
<td>MT A152</td>
<td>4</td>
</tr>
<tr>
<td>Humanities</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CMMA293</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>
The overall program provides an integrated educational experience not only to fulfill an objective appropriate to the engineering profession, but also to meet the institution's core curriculum. Several laboratories in sequence to provide a meaningful, major engineering design experience, which is developed and integrated throughout the program by introducing fundamental elements of design process in computer skills and computer software, the program provides a design effective communication skills. In addition to a strong focus on computer science and engineering, the program incorporates analysis, design and development of electrical and electronic systems, and prepares graduates for entry into the profession as productive and effective engineers.

The Department of Electrical Engineering offers a unique undergraduate program leading to the degree of Bachelor of Science in Electrical Engineering. The department provides a program that incorporates analysis, design and development of electrical and electronic systems, and prepares graduates for entry into the profession as productive and effective engineers.

The program is directed toward sequential development of course work to provide breadth and depth in electrical and electronics engineering. It provides instructions to cover broad areas that include electronics, communication systems, computer systems, control systems, power systems, electromagnetics and signal processing. The program is intended to develop the ability of graduates to apply knowledge of mathematics, sciences and engineering. It ensures that graduates have an opportunity to work on multi-disciplinary teams, and also develop effective communication skills. In addition to a strong focus on computer skills and computer software, the program provides a design experience, which is developed and integrated throughout the program by introducing fundamental elements of design process in course work. The program also includes a two-semester design sequence to provide a meaningful, major engineering design experience that also focuses on professional practice. Several laboratories in the program provide "hands-on" experience. There is also a strong emphasis on the studies of humanities and social sciences that serve not only to fulfill an objective appropriate to the engineering profession but also to meet Saint Louis University's educational objectives. The overall program provides an integrated educational experience and training to maintain professional competency through life-long learning.

The Electrical Engineering Program at Parks is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

**Electrical Engineering (B.S.)**

**Course of Study**

**Humanities/ Social Sciences**
6 approved courses in the area of humanities and social sciences (18 hours). The courses selected must serve not only to fulfill ABET's "breadth and depth" requirements, but also to meet the institution's core curriculum.

**English Placement Examination**
ACT/SAT scores, or TOEFL scores for international students, are used to identify student proficiency in written communication in the English language, and to assign students to the appropriate composition/writing courses.

**English**
2 approved courses in written/oral communication (4 hours) as listed in the typical course of study.

**Mathematics Placement Examination**
Students without transfer credit for MT-A117 Algebra and Trigonometry or MT-A120 College Algebra and MT-A141 Pre-Calculus must pass a proficiency examination before enrolling in MT-A152 Engineering Calculus I.

**Mathematics**
5 approved mathematics courses (18 hours) as listed in the typical course of study.

**Physics**
2 approved calculus-based physics courses with laboratories (8 hours) as listed in the typical course of study.

**Chemistry**
1 approved chemistry course with laboratory (4 hours) as listed in the typical course of study.

**Science and Math Elective**
1 approved course (3 hours) in life sciences, earth sciences, or advanced chemistry, physics, or mathematics. This must not be used to satisfy other curriculum requirements.

**Major and Related Courses**

**Computer**
2 approved course in computer programming (5 hours) as listed in the typical course of study.

**Engineering Science**
2 approved engineering science courses other than electrical engineering (4 hours) as listed in the typical course of study, one of which must be selected from the list of Engineering Science Electives.

**EE Electives**
3 approved courses (9 hours) from the list of EE Electives.

**Technical Elective**
1 approved course (3 hours) selected from courses in science, mathematics, or engineering at the 300-level or higher. This 3-credit course must not be used to satisfy other curriculum requirements.

**Electrical Engineering**
15 approved electrical engineering courses (49 hours)
Typical Course of Study

**FRESHMAN**
- CH-A151 .......... 3
- CH-A152 .......... 1
- ENG-A1921 ....... 3
- ES-P101 .......... 1
- MT-A1522, 3 .... 4
- TH-A100 .......... 3
- Humanities ....... 3
- EE Elective ........ 3
- Total Credit Hours: 126

**Sophomore**
- CMMA293 .......... 1
- CS-P125 .......... 4
- EE-P210 .......... 3
- MT-A2543 ....... 4
- PH-P153 .......... 3
- PH-P154 .......... 1
- Humanities ....... 16
- EE Elective ........ 3
- E/S Elective .......... 3
- Total Credit Hours: 16

**Junior**
- EE-P301 .......... 3
- EE-P303 .......... 3
- EE-P305 .......... 3
- EE-P306 .......... 1
- EE-P307 .......... 3
- Cultural Diversity4 .. 3
- S/M Elective ....... 3
- EE Elective ........ 3
- Total Credit Hours: 17

**Senior**
- EE-P403 .......... 3
- EE-P407 .......... 3
- EE-P490 .......... 3
- EE Elective6 ....... 3
- EE Elective ........ 3
- Total Credit Hours: 16

**Physics (B.A.)**

Prerequisites
- PH-P151 Physics I with Calculus
- PH-P152 Physics I with Calculus Laboratory
- PH-P153 Physics II with Calculus
- PH-P154 Physics II with Calculus Laboratory
- or the PH-P161, 162, 163, 164 Engineering Physics sequence

Knowledge of differential and integral calculus including
- MT-A142 Calculus I
MT-A143 Calculus II  
MT-A244 Calculus III  
or the MT-A152, 153, 254 Engineering Calculus sequence

Required Courses (in addition to core requirements)  
PH-P261 Modern Physics  
PH-P262 Modern Physics Laboratory  
PH-P311 Classical Mechanics  
PH-P421 Electricity and Magnetism I  
PH-P461 Quantum Mechanics  
CH-A161 Introduction to Chemistry I (or CH-A151, 152)  
MT-A351 Differential Equations I (or MT-A354)  
MT-A315 Introduction to Linear Algebra  
MT-A451 Introduction to Complex Variables

Additional Requirements  
Two additional upper division physics courses (minimum 6 hours) selected from the Recommended list below. Senior Inquiry may be satisfied by one of the following:  
PH-P484 Thesis  
PH-P488 Research Project  
PH-P489 Comprehensive Examination

Recommended additional upper division courses  
for students who intend to pursue graduate studies in Physics:  
PH-P301 Computational Physics  
PH-P312 Advanced Classical Mechanics  
PH-P331 Optics Laboratory  
PH-P341 Thermodynamics and Statistical Mechanics  
PH-P351 Analog and Digital Electronics  
PH-P393 Computers in Science  
PH-P422 Electricity and Magnetism II  
PH-P462 Applications of Quantum Mechanics

Typical Course of Study

<table>
<thead>
<tr>
<th></th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRESHMAN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-P151</td>
<td>3</td>
<td>PH-P153</td>
</tr>
<tr>
<td>PH-P152</td>
<td>1</td>
<td>PH-P154</td>
</tr>
<tr>
<td>MT-A142</td>
<td>4</td>
<td>MT-A143</td>
</tr>
<tr>
<td>Core: Foreign Lang.</td>
<td>3</td>
<td>Core: Foreign Lang.</td>
</tr>
<tr>
<td>Core: HS-A111</td>
<td>3</td>
<td>Core: HS-A112</td>
</tr>
<tr>
<td>Core: ENG-A190</td>
<td>17</td>
<td>Core: ENG-A200</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Level Lit</td>
</tr>
<tr>
<td><strong>SOPHOMORE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-P261</td>
<td>3</td>
<td>PH-P331</td>
</tr>
<tr>
<td>PH-P262</td>
<td>1</td>
<td>PH-P332</td>
</tr>
<tr>
<td>MT-A244</td>
<td>4</td>
<td>MT-A226</td>
</tr>
<tr>
<td>CH-A161</td>
<td>4</td>
<td>CS-P125</td>
</tr>
<tr>
<td>Core: PL-A105</td>
<td>3</td>
<td>Core: TH-A100</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Core: Fine Arts</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td><strong>JUNIOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-P311</td>
<td>3</td>
<td>PH-P312</td>
</tr>
<tr>
<td>PH-P301</td>
<td>3</td>
<td>PH-P421</td>
</tr>
<tr>
<td>MT-A351</td>
<td>3</td>
<td>MT-P341</td>
</tr>
<tr>
<td>MT-A315</td>
<td>3</td>
<td>PH-P488</td>
</tr>
<tr>
<td>Core: PL-A205</td>
<td>3</td>
<td>PH-A351</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Core: TH-A200</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>level</td>
</tr>
<tr>
<td><strong>SENIOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-P422</td>
<td>3</td>
<td>PH-P462</td>
</tr>
<tr>
<td>PH-P461</td>
<td>3</td>
<td>Core: ENG-A300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>level Lit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICS MINOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT-A451</td>
<td>3</td>
<td>Core: PL-A300/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 level</td>
</tr>
<tr>
<td>PH-A488</td>
<td>0-3</td>
<td>Core: TH-A300</td>
</tr>
<tr>
<td>Core: Social Science</td>
<td>3</td>
<td>level 3</td>
</tr>
<tr>
<td>Core: Cult. Diversity</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 130

**Physics Minor**  
(Parks College)  
A student enrolled in Parks College of Engineering and Aviation can earn a minor in physics by completing at least 22 hours of physics consisting of:  
I. PH-P161 through 164 and PH-P261 (without lab), and  
II. Three upper division physics courses numbered between PH-P300 and PH-P470.  

Students transferring credit in physics from other universities must as a minimum take three 300/400-level courses at Saint Louis University, selected in consultation with the Physics Department, regardless of courses completed at other institutions.

**Physics Minor**  
(College of Arts and Sciences)  
A student in the College of Arts and Sciences can earn a minor in physics by completing at least 18 hours of physics consisting of:  
I. PH-P151 through 154 and PH-P261-262, and  
II. Two upper division physics courses numbered between PH-P300 and PH-P470.  

Students transferring physics credit from other colleges or universities must as a minimum take Modern Physics with laboratory (PH-P261, 262) at Saint Louis University along with at least one 300/400 level course, selected in consultation with the Physics Department.

**Dual Degree Engineering Program with Washington University Double-Degree**  
and Double-Major Programs with Parks College  
The course sequence listed below is a typical three-year physics program on the Frost Campus preceding the two-year engineering component at Washington University (See Special Programs). It is also possible to obtain a double degree or a double major combining physics with an engineering field at Parks College. The standard University requirements for such degrees apply (See Double Undergraduate Degrees and Double Majors). The student should consult with the program advisor.

<table>
<thead>
<tr>
<th></th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRESHMAN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT-A142</td>
<td>4</td>
<td>MT-A143</td>
</tr>
<tr>
<td>PH-P151</td>
<td>3</td>
<td>PH-P153</td>
</tr>
<tr>
<td>PH-P152</td>
<td>1</td>
<td>PH-P154</td>
</tr>
<tr>
<td>MT-A143</td>
<td>4</td>
<td>Core: ENG-A190</td>
</tr>
<tr>
<td>Core: Foreign Lang.</td>
<td>3</td>
<td>Core: Eng-A200</td>
</tr>
<tr>
<td>Core: HS-A111</td>
<td>3</td>
<td>Core: HS-A112</td>
</tr>
<tr>
<td>Core: ENG-A190</td>
<td>17</td>
<td>Level Lit</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td><strong>SOPHOMORE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT-A244</td>
<td>4</td>
<td>MT-A226</td>
</tr>
<tr>
<td>CH-A161</td>
<td>4</td>
<td>CS-P125</td>
</tr>
<tr>
<td>Core: PL-A105</td>
<td>3</td>
<td>Core: TH-A100</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Core: Fine Arts</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td><strong>JUNIOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MT-A351</td>
<td>3</td>
<td>MT-P341</td>
</tr>
<tr>
<td>MT-A315</td>
<td>3</td>
<td>PH-P488</td>
</tr>
<tr>
<td>Core: PL-A205</td>
<td>3</td>
<td>PH-A351</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Core: TH-A200</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>level</td>
</tr>
<tr>
<td><strong>SENIOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-P422</td>
<td>3</td>
<td>PH-P462</td>
</tr>
<tr>
<td>PH-P461</td>
<td>4</td>
<td>Core: ENG-A300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>level Lit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Course Category</td>
<td>Credit Hours</td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>Core: Foreign Lang.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Core: HS-A112</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>JUNIOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-P311</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MT-A351</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Core: Cult. Diversity</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Core: Social Science</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Core: TH-A300 level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Core: PL-A300 level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Core: Social Science</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Core: ENG-A300 level Lit.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Core: Fine Arts</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

(CS-P315, CS-P320, and CS-P325 will be referred to as CS Theory courses.)