

College of Science And Mathematics

Perry A. Tompkins, Dean

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<http://www.sbuniv.edu/COSM>

Departments Within The College

Athletic Training
Biology
Chemistry and Physics

Mathematics
Physical Therapy
Darrell R. Strait Center for the Integration of
Science and Christian Faith

Mission Statement

The SBU College of Science and Mathematics pursues excellence and offers quality instruction from a Christian perspective to broaden non-majors scientific awareness and to prepare majors for career success or further study in their chosen field.

Vision Statement

The SBU College of Science and Mathematics pursues excellence by:

- serving our diverse population of undergraduate majors and non-majors as well as graduate majors in broadening their scientific knowledge and integrating Christian faith with scientific disciplines;
- preparing students for continued scholarship and positions of leadership from a Christian perspective in occupations that are impacted directly by our college;
- providing leadership in the uses of *technology* to enhance teaching and research and in communicating technology's role to our students, the university community, and society; and
- promoting scholarship of the faculty by encouraging pursuit of advanced degrees, continuing professional development, research, grantsmanship, and professional presentations and publications.

The College of Science and Mathematics provides courses and programs designed to prepare students for careers and/or graduate study in Athletic Training, Biology, Chemistry, Mathematics, Physical Therapy, and the health professions. Course work for Pre-Medicine, Pre-Dentistry, Pre-Optometry, Pre-Veterinary, Pre-Pharmacy, Pre-Physician Assistant, Pre-Engineering and Medical Technology is offered.

DEPARTMENT OF ATHLETIC TRAINING

Department Chair, Program Director, CIE: TJ John

Office: Meyer Sports Center Athletic Training Laboratory - (417) 328-1792

Faculty: Jason Halverson, Clinical Coordinator

Approved Clinical Instructors: Clint Carroz, David Gordon, Mike Wolhoy, Morgan Simpson

<http://www.sbuniv.edu/cosm/AT>

Mission Statement

The Athletic Training Education Program at Southwest Baptist University is a Christ-centered academic unit providing quality didactic and relevant clinical experiences preparing entry-level athletic training students to be skilled, dedicated, caring, and ethical allied health professionals.

SBU-ATEP Goals (*est. 10.18.00*)

Upon successful completion of the Southwest Baptist University Athletic Training Education Program (SBU-ATEP), graduates will be able to:

- Sit for the Board of Certification Examination (BOC),
- Practice the profession of Athletic Training in a wide variety of traditional and non-traditional clinical settings,
- Serve the community and the profession in an ethical and responsible manner, and

- Pursue lifelong learning through appropriate continuing and post professional education.

Program History and Accreditation Status

The athletic training program at Southwest Baptist University prepares students for careers in athletic training through the development of knowledge and skills needed for the entry-level athletic trainer. The athletic training program is CAATE (Commission on Accreditation of Athletic Training Education) accredited. Questions or concerns regarding accreditation of Athletic Training Education programs should be directed to Commission on Accreditation of Athletic Training Education, 2201 Double Creek Drive, Suite 5006, Round Rock, Texas 78664, phone 512-733-9700/ Fax 513-733-9701/ Email: caate@scglobal.net / Website: <http://caate.net>.

Description of Program

The baccalaureate degree in Athletic Training requires a minimum of 130 semester hours of credit earned by completion of the University general education and graduation requirements, the Athletic Training major requirements and required support courses.

To be certified by the Board of Certification (BOC), a student must successfully complete all required graduation elements from a Commission on Accreditation of Athletic Training Education Accredited Athletic Training Education Program (ATEP) and successfully pass the BOC examination.

The athletic training program at Southwest Baptist University is a professional allied health program in which students submit an application the spring of their freshman year for entry into the professional phase of the program beginning in the fall of their sophomore year. Admission will follow the procedure outlined in this section of the course catalog. Once admitted to the professional phase, it is expected that students will achieve and adhere to appropriate standards for successful matriculation, policies and procedures and maintain requirements for the clinical education of the student. To be a safe, competent, and properly credentialed athletic trainer, the student must demonstrate expertise in the following domains of the *4th Edition of the NATA Athletic Training Educational Competencies*: (1) Risk Management and Injury Prevention; (2) Pathology of Injuries and Illness; (3) Assessment and Evaluation; (4) Pharmacology; (5) Therapeutic Modalities; (6) Therapeutic Exercise; (7) General Medical Conditions and Disabilities; (8) Nutrition; (9) Psychosocial Intervention and Referral; (10) Health Care Administration; (11) Professional Development and Responsibilities.

Clinical Practicum's: As part of the baccalaureate degree in Athletic Training, students are required to actively participate and successfully complete a minimum of four different clinical practicum courses in a sports medicine or Athletic Training setting. These practicum courses are completed during the normal academic semesters. These courses are part of the professional phase and require the student to commit a minimum of 12 hours per week of clinical education experience.

Assessment

Periodic measurements of the student's perceptions, intellectual growth, clinical performance, and professional behaviors are obtained as one means for the University to assess and improve its academic programs and student learning. The information obtained is used to measure the competencies and proficiencies and to determine and improve the quality of the educational experience for students. Students must obtain a minimum grade of "C" in all major requirement courses to matriculate in the program.

Admission

Application Time Lines

All application materials must be received by March 1 in order to be considered for fall entry of the next academic year. Candidates will be notified of their admission status to the professional phase of the program on or before April 1. If you have not heard from the Department of Athletic Training the first week in March, please contact our office immediately.

Appointments

The number of appointments to the program at SBU will vary from year to year depending on space availability and appropriate supervisory capacity according to accreditation standards.

Disclaimers and Waivers

Selection into the ATEP is competitive and successful completion of identified criteria is not a guarantee of acceptance into the professional phase of the program. Students not meeting the established minimum criteria may write an appeal letter directly to the Athletic Training Department establishing grounds for consideration. Submission of an appeal letter should not be constructed as a guarantee that the minimum criteria will be waived or modified. All appeal letters are considered solely on a case-by-case basis.

Admission Criteria

To be considered as a candidate for admission into the program, a student must have completed and submitted the following: (All forms are available upon request or at the website: <http://www.sbuniv.edu/cosm/at/>)

1. Declared major in Bachelor of Science in Athletic Training at SBU
2. Minimum of 2 semesters completed.
3. Minimum cumulative GPA of 2.50.
4. Enrolled in or successful completion of the following courses (course listings are specific to SBU):
 - HPE 3092 Standard First Aid *or* HPE 3093 Sport Safety Training
 - ATH 2013 Introduction to Athletic Training (Grade of B or better)
 - BIO 1004 Principles of Biology
5. Completion of a directed observer program. Transfer students admission will be based upon experience.
6. Evaluation of the student within the directed observer program by the athletic trainer that supervised the most hours. Transfer students will have to obtain an evaluation form (via website or mailed from the Athletic Training Department). The institutions Head Athletic Trainer must fill out this form.
7. Proof of eligibility of ADA Technical Standards for Admission to the ATEP
8. Program's Physical Exam Form
9. Immunization records of:
 - Hepatitis B (initiation of the series is also acceptable with the documentation of completion appropriately and timely submitted)
 - Measles
 - Mumps
 - Rubella
 - Tetanus
 - Diphtheria
10. Copy of current First Aid/CPR Certification.
11. Transcripts meeting minimum criteria. Current students at Southwest Baptist University must submit transcripts independent from their prospective advisor. Note: Students not currently enrolled at SBU will need to complete and submit formal application to the University including official transcripts and paying appropriate fees.
12. Transfer students must be accepted to Southwest Baptist University to be considered for entry into the program.

After meeting these requirements, acceptance into the program is based upon 6 weighted criteria. Students with the top scores will be considered for admission into the program. (Number based on amount of eligible seats). The weighted criteria are:

1. Overall Grade Point Average (1 pt/.1pt GPA)	25 (2.50) to 40 (4.00) pts
2. Completion of the Application Packet (2 pts/item)	20 pts
3. Directed Observer Evaluation Form (5 pts/category)	56 pts
Transfer students are evaluated by the ATC that observed most of their hours	
4. Interview with Admissions Committee (120 pts)	84 pts
5. Essay - "Why do I want to be an Athletic Trainer?" - evaluated by the Program Director	30 pts
6. Overall Athletic Training Potential - evaluated by the Program Director	20 pts.
Total possible points	235- 250 pts

Application Procedures

Applicants are to submit the following information:

1. Application Form
2. Directed Observer Hours of Documentation Form
3. Athletic Training Student Evaluation Form
4. Technical Standards for Admission form
5. Immunization records
6. CPR/First Aid Certification
7. Transcripts meeting the minimum criteria. Current students at Southwest Baptist University must submit transcripts independent from their perspective advisor.
8. Program's Physical Exam Form

It is strongly encouraged that all materials be submitted at the same time. Applications can be hand delivered directly to the Athletic Training Department or can be mailed to:

Athletic Training Education Department
 Attn: TJ John MA ATC/L
 Southwest Baptist University
 1600 University Avenue
 Bolivar, MO 65613

Once the application is received, the Athletic Training Department will review for completeness and mail an acknowledgment of the received application. If items are missing from the application, the Department will then direct the applicant to provide further information as needed to complete the application. It is recommended that applicants not hearing from the Department within 1 week of submission contact the office to ensure that the application has been processed.

ATEP Academic Plan

The ATEP at SBU is a four-year undergraduate program in the 1+3 model leading to conferring of a B.S. in Athletic Training. The components of the degree include General Education (42 hours), Graduation Requirements (10 hours), Major Requirements (52 hours), Support Courses (26 hours), for a comprehensive credit hour total of 130 hours.

Major Requirements (52 hours in Sequence)

The Major Requirements serve as the primary integration of learned concepts for the student athletic trainers, cognitive and psychomotor, pertaining to the competencies of becoming a professional athletic trainer. All 52 hours (16 courses) are led by faculty within the Department of Athletic Training and are based upon the integration of Christian and professional values as well as the structure of NATA Role Delineation Study (4th ed.), which includes the following domains of learning: a) prevention, b) recognition, evaluation and assessment, c) immediate care, d) treatment, rehabilitation, and reconditioning, e) organization and administration, and f) professional development and responsibility. This six-pillar domain serves as the building block for the delivery of the Major Requirements found within the ATEP course offerings. The following is the Major Requirements; course descriptions that must be completed in order (lock-step sequence). To declare a major the student must obtain their own athletic training student liability insurance. Forms can be obtained from the department chair.

Athletic Training Major - B.S. Degree

ATH 2013 Introduction to Athletic Training	3 hours
ATH 3013 Athletic Training Techniques I	3 hours
ATH 3022 Athletic Training Practicum I	3 hours
ATH 3114 Athletic Training Evaluation: Above Diaphragm	4 hours
ATH 3103 Sports Performance.....	3 hours
ATH 3122 Athletic Training Practicum II	3 hours
ATH 3124 Athletic Training Evaluation: Below Diaphragm	4 hours
ATH 3133 General Medical Conditions and Pharmacology.....	3 hours
ATH 4014 Therapeutic Modalities	4 hours
ATH 4022 Athletic Training Practicum III.....	3 hours
ATH 4034 Sports Rehabilitation	4 hours
ATH 4113 Athletic Training Administration	3 hours
ATH 4122 Athletic Training Practicum IV.....	3 hours
ATH 4133 Athletic Training Professional Seminar	3 hours
ATH 4963 Athletic Training Field Experience I	3 hours
ATH 4973 Athletic Training Field Experience II	3 hours

Clinical Education

The Clinical Education Courses are an integral portion of the student's education. The 6 clinical education courses consist of ATH 3023, ATH 3123, ATH 4023, ATH 4123, ATH 4963 and ATH 4973. These courses require a time commitment of 3 times per week in the assigned clinical education setting or an average of 12 hours per week. The clinical education courses will allow the student to gain experience to upper extremity, lower extremity, and equipment intensive and general medical components of clinical education. The final two clinical courses ATH 4963 and ATH 4973 are field experience courses designed to allow the athletic training student to gain experience in applying all the proficiencies under the supervision of their assigned ACI and give them experience in working with other allied health professionals and physicians.

Support Courses (26-27 hours)

The Support Courses for the ATEP provide depth and breadth to the learning for the Major Requirements. Current course offerings at SBU were identified that provide content which meets or exceeds the mandates established in the nineteen content areas, which include: 1) assessment of injury and illness, 2) exercise physiology, 3) first aid and emergency care, 4) general medical conditions and disabilities, 5) health care administration, 6) human anatomy, 7) human physiology, 8) kinesiology, 9) medical ethics, 10) nutrition, 11) pathology of injury illness, 12) pharmacology, 13) professional development and responsibilities, 14) psychosocial intervention and referral, 15) risk management, 16) strength training and reconditioning, 17) therapeutic exercise, 18) therapeutic modalities, and 19) weight management. Some of the nineteen content areas are well developed and delineated within this 26-hour block of courses, while others are introduced to the student in order to provide a foundation to didactic information provided in the Major Requirement courses. Course descriptions are provided in this catalog. The Support Courses include the following:

PSY 3243	Elementary Statistics	3 hours
PSY 4233	Research Design.....	3 hours
HPE 3073	Physiology of Exercise.....	3 hours
HPE 3092	Standard First Aid.....	2-3 hours
<i>or</i>		
HPE 3093	Sport Safety Training	
HPE 4003	Kinesiology.....	3 hours
BIO 2204	Human Anatomy and Physiology I	4 hours
BIO 3304	Human Anatomy and Physiology II	4 hours
BIO 4404	Pathophysiology.....	4 hours

DEPARTMENT OF BIOLOGY

Department Chair: Craig Endres

Office: Wheeler 114/E - (417) 328-1743

Faculty: Hillary Glauser-Patton, Rosalyn Snellen, Dennis Siegfried

[http:// www.sbuniv.edu/cosm/BIO/Index.htm](http://www.sbuniv.edu/cosm/BIO/Index.htm)

Mission Statement

The Southwest Baptist University Department of Biology functions within the traditional liberal arts setting to educate majors and non-majors how to make informed decisions about life science issues. Biology majors are provided with a basic foundation in biology which will allow them to think critically about biological problems, be able to interpret and communicate within the discipline of biology and possess the technical skills that will prepare them to be leaders within their area of specialty.

Vision Statement

The SBU Department of Biology aspires to be a community of Christian scholars who:

- Implement and maintain a strong, broad-based curriculum for biology majors to prepare them for a career in the life sciences
- Offer quality instruction by incorporating pedagogy that blends traditional methods and discovery-based learning with modern instructional technology
- Provide quality academic advising and career counseling
- Promote professional development and life-long learning
- Provide to non-science majors a strong foundation in the life sciences that will meet the needs of their respective disciplines

The Department of Biology presents a fundamental and practical knowledge of living organisms, their relationships to each other and their places in the scientific world. The Department of Biology also administers the programs and advises the majors in medical technology.

The baccalaureate degree in biology requires a minimum of 128 semester hours of credit to be earned by completion of the University general education requirements, the biology core curriculum, additional selected biology courses and required support courses. **Note:** Students majoring or minoring in biology will not be permitted to select the pass/fail option for any required course in the major or minor. Biology majors must take the Major Field Assessment Test (MFT) for graduation. An overall grade point average of 2.25 is required in all biology courses.

Core Biology Curriculum

The following courses are required of all graduating biology majors. These courses (24 hours) provide an essential foundation for more specialized study.

BIO 1111	Biology Colloquium.....	1 hour
BIO 2134	General Zoology	4 hours
BIO 2234	General Botany	4 hours
BIO/CHE 3012	Methods in Scientific Research.....	2 hours
BIO 3324	Genetics	4 hours
BIO 3334	Ecology	4 hours
BIO 4224	Cell and Molecular Biology	4 hours
BIO 4471	Seminar in Biology	1 hour

Biology Concentrations

In addition to the Biology department core curriculum, biology majors must complete a 16-hour concentration from one of the areas listed below.

Biomedical Science (Prehealth Professional, Graduate Studies)

BIO 2204	Human Anatomy and Physiology I	4 hours
BIO 3304	Human Anatomy and Physiology II.....	4 hours
Electives chosen from the following:.....		8 hours
BIO 3314	Microbiology	
BIO 3322	Immunology	
BIO 3344	Vertebrate Physiology	
BIO/CHE 3364	Biochemistry	
BIO 3384	Histology	
BIO 3394	Pathogenic Microbiology	
BIO 4404	Pathophysiology	
BIO 4444	Vertebrate Embryology	
BIO 448(1-3)	Biological Investigations	
BIO 498(1-3)	Biological Internship	

Environmental Biology/Field Biology

BIO 2214	Environmental Biology	4 hours
BIO 3544	Wildlife Biology	4 hours
Electives chosen from the following:.....		8 hours
BIO 3314	Microbiology	
BIO 3354	Plant Taxonomy	
BIO 4414	Freshwater Biology	
BIO 448(1-4)	Biological Investigations	
BIO 498(1-3)	Biological Internship	
CHE 3002	Environmental Chemistry	

General Biology

Electives (12 hours must be 3000 level or above)	16 hours
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Biology Major - B.A. Degree

Students seeking the B.A. degree in biology must complete a concentration of 38 or more semester hours in biology course work.

In addition to the biology core curriculum, B.A. biology majors are required to complete the listed support courses. Prerequisites are needed for some courses.

General Education Requirements	42 hours
Graduation Requirements	16-18 hours
Biology Core Curriculum	24 hours
Biology Concentration	16 hours
Required Support Courses (12 hours)	
CHE 1115 and CHE 1125 General Chemistry I and General Chemistry II	10 hours
SCF 3402 Biology Through the Eyes of Faith	2 hours

Biology Major - B.S. Degree

Students seeking the B.S. degree in biology must complete 38 or more semester hours in biology course work. In addition to the biology core curriculum and area of concentration, B.S. biology majors are required to complete the listed support courses. Prerequisites are needed for some courses.

General Education Requirements	42 hours
Graduation Requirements	10 hours
Biology Core Curriculum	24 hours
Biology Concentration	16 hours
Required Support Courses (20-22 hours)	
CHE 1115 <i>and</i> CHE 1125 General Chemistry I <i>and</i> General Chemistry II	10 hours
SCF 3402 Biology Through the Eyes of Faith	2 hours
CHE 3304 Organic Chemistry I <i>and</i> CHE 3314 Organic Chemistry II <i>or</i>	8 hours
PHY 1115 General Physics I <i>and</i> PHY 1125 General Physics II <i>or</i>	10 hours
MAT 1195 Analytics and Calculus I <i>and</i> MAT 2255 Analytics and Calculus II <i>or</i>	10 hours
CIS 1144 Computer Science I <i>and</i> CIS 1154 Computer Science II	8 hours

Biology Minor (22 hours)

BIO 1111 Biology Colloquium.....	1 hour
BIO 2134 General Zoology.....	4 hours
BIO 2234 General Botany.....	4 hours
BIO 4471 Seminar in Biology.....	1 hour
Biology electives	12 hours

Biology Major - B. S. (Education) Degree

This B.S. degree will allow students to pursue a career in teaching biology at the high school level in a timely fashion. Designated coursework in biology combined with specified courses in the physical science area and the professional education sequence will enable the biology education major to be certified in biology as well as in general science. Students must also meet any other requirements as specified by the state or the SBU Department of Education for certification plus the University general education and graduation requirements. This program requires a minimum of 137 semester hours of coursework. A biology education major is required to take the Major Field Test (MFT) in biology. An overall science GPA of 2.50 is also required.

Biology Education Courses (34 hours)	
BIO 1111 Biology Colloquium.....	1 hour
BIO 2214 Environmental Biology	4 hours
BIO 2134 General Zoology	4 hours
BIO 2234 General Botany	4 hours
BIO 3324 Genetics	4 hours
BIO 3334 Ecology	4 hours
BIO 4471 Biology Seminar	1 hour
Additional hours of Biology electives	12 hours
Required Support Courses (14 hours)	
CHE 1115 General Chemistry I	5 hours
CHE 1125 General Chemistry II.....	5 hours
*PHS 1004 Introduction to Physical Science	4 hours
Additional Required Courses (7 hours)	
PHS 1114 Introduction to Earth Science.....	4 hours
PHS 3303 History & Philosophy of Science and Technology.....	3 hours
Professional Education Sequence (39 hours)	

* PHY 1115/1125 may be substituted for PHS 1004

DEPARTMENT OF CHEMISTRY AND PHYSICS

Department Chairman: John D. Patton

Office: Wheeler 114/I - (417) 328-1663

Faculty: Mark D. Kellogg, Craig Masters, Perry A. Tompkins

<http://www.sbuniv.edu/CHEMPHYS/index.htm>

Mission Statement

The Southwest Baptist University Department of Chemistry and Physics provides, from a Christian perspective, quality instruction and research experiences in chemistry, physics, and the other physical sciences.

Vision Statement

The SBU Department of Chemistry and Physics strives to be a Christ-centered community of scholars that:

- gives quality instruction in the principles and applications of chemistry, physics, and the other physical sciences.
- furnishes intellectually stimulating laboratory and research experiences that foster analytical thinking and discovery-based learning.
- provides quality academic advising.
- offers career counseling in the physical and health sciences.
- prepares its students for careers in science-related professions.

The Department of Chemistry and Physics seeks to present the basic principles of both chemistry and physics, each as its own intellectual discipline; to enhance facility in analytical, critical thinking -- especially thinking which involves logical and quantitative relationship; to provide exciting and stimulating laboratory experiences as an aid to the learning process; and to develop scientifically literate citizens through an understanding of the methods of science and the roles of the physical sciences, including chemistry and physics, in society. The Department of Chemistry and Physics also administers the program in Pre-Engineering and is responsible for the curriculum in Physical Science.

Chemistry

The baccalaureate degree in chemistry requires a minimum of 128 semester hours of credit to be earned by completion of the University general education and graduation requirements, the chemistry core curriculum, additional selected upper division chemistry courses, required support courses, plus general and/or technical electives. An overall grade point average of 2.0 is required in all chemistry course work.

To receive a degree in chemistry and be certified to teach chemistry and other sciences in Missouri, the student must also satisfy the Department of Education's other requirements for certification. Science education students are encouraged to obtain a B.S. Chemistry degree.

Core Chemistry Curriculum

The following courses are required of all graduating chemistry majors. These courses (29 semester hours) provide an essential foundation for more specialized study. All core courses except CHE 3354, CHE 3371, and CHE 4471 should be completed before any other upper division courses are attempted. *A minimum grade of C is required in all core courses.*

Chemistry Core Courses (29 hours)

CHE 1115	General Chemistry I	5 hours
CHE 1125	General Chemistry II.....	5 hours
CHE 3304	Organic Chemistry I.....	4 hours
CHE 3314	Organic Chemistry II	4 hours
CHE 3345	Analytical Chemistry.....	5 hours
CHE 3354	Instrumental Analysis.....	4 hours
CHE 3371	Seminar in Chemistry I	1 hour
CHE 4471	Seminar in Chemistry II	1 hour

Required Support Courses (17 hours)

MAT 1195	Analytics and Calculus I	5 hours
PHY 1115	General Physics I and PHY 1125 General Physics II	10 hours
<i>or</i>		
PHY 2215	University Physics I and PHY 2225 University Physics II	10 hours
SCF 3412	Chemistry Through the Eyes of Faith	2 hours

Chemistry Major - B.A. Degree

This chemistry major program is for students who desire the chemistry major with a liberal arts emphasis. The B.A. chemistry major graduate is required to complete a concentration of 35 or more semester hours of chemistry coursework, including the core curriculum and the required support courses. The students obtaining the B.A. chemistry degree must also complete the University's language requirements for the degree. As additional graduation requirements, B. A. degree chemistry majors must take the Major Field Assessment Test (MFT) in chemistry and the departmental Chemistry Core Curriculum Assessment Test (ChemCAT) for graduation.

Chemistry Major - B.S. Degree

This chemistry major program prepares students for graduate work in chemistry, for employment as chemists, for professional schools in the health sciences, for Unified Science Certification with endorsement in chemistry, or for other technical areas needing a strong chemistry/science background. Students seeking the B.S. major in chemistry must complete a concentration of 35 or more semester hours in chemistry coursework. In addition to the chemistry core curriculum and required support courses, B.S. chemistry majors are required to complete a minimum of six semester hours of upper division technical electives. Technical electives are considered to be courses taken from biology (BIO), computer science (CIS), mathematics (MAT), physical science (PHS), physics (PHY), and science and Christian faith (SCF). As additional graduation requirements, B.S. degree chemistry majors must take the Major Field Assessment Test (MFT) and the departmental Chemistry Core Curriculum Assessment Test (ChemCAT) for graduation.

Upper Division Chemistry Electives

CHE 3002	Environmental Chemistry	2 hours
CHE 3324	Physical Chemistry I	4 hours
CHE 3334	Physical Chemistry II.....	4 hours
CHE 3364	Biochemistry	4 hours
CHE 4002	Interpretive Spectroscopy	2 hours
CHE 4414	Advanced Inorganic Chemistry.....	4 hours
PHS 3303	History and Philosophy of Science and Technology.....	3 hours
PHY 3363	Modern Physics	3 hours
CHE 448(1-3)	Chemistry Research.....	1-3 hours
CHE 495(1-5)	Special Topics in Chemistry.....	1-5 hours
CHE 499(1-3)	Independent Study.....	1-3 hours

Minor in Chemistry

To obtain a chemistry minor, the student must complete all the chemistry core curriculum except CHE 3354 and CHE 4471.

Chemistry Major - B. S. (Education) Degree

This unique B.S. degree in Chemistry Education has been approved by the Missouri State Department of Elementary and Secondary Education. Designated coursework in chemistry combined with specified courses in the physical science area and the professional education sequence will enable the chemistry education major to be certified in chemistry as well as in general science. Students must also meet any other requirements as specified by the state or the SBU Department of Education for certification plus the University general education and graduation requirements. This program requires a minimum of 133 semester hours of coursework. As additional graduation requirements, B.S. chemistry education majors must take the Major Field Test (MFT) in chemistry and the departmental Chemistry Core Curriculum Assessment Test (ChemCAT) for graduation. An overall science GPA of 2.50 is also required.

Chemistry Education Courses (30 hours)

CHE 1115	General Chemistry I.....	5 hours
CHE 1125	General Chemistry II.....	5 hours
CHE 3002	Environmental Chemistry	2 hours
CHE 3304	Organic Chemistry I.....	4 hours
CHE 3314	Organic Chemistry II	4 hours
CHE 3345	Analytical Chemistry	5 hours
CHE 3364	Biochemistry.....	4 hours

CHE 3371	Seminar in Chemistry I	1 hour
Required Support Courses (17 hours)		
MAT 1195	Analytics and Calculus I	5 hours
PHY 1115	General Physics I <i>and</i> PHY 1125 General Physics II	10 hours
<i>or</i>		
PHY 2215	University Physics I <i>and</i> PHY 2225 University Physics II	10 hours
SCF 3412	Chemistry Through the Eyes of Faith	2 hours
Additional Physical Science Courses (7 hours)		
PHS 1114	Introduction to Earth Science	4 hours
PHS 3303	History and Philosophy of Science and Technology	3 hours
Professional Education Sequence (39 hours)		

Physics

Minor (Physics Major Not Offered)

An overall **2.00** grade point average is required for all physics/physical science coursework.

Meteorology (PHS 2214) or Astronomy (PHS 2314) may be substituted for one of the two physics elective courses.

Physics/Physical Science Courses (22 hours)

PHY 2215	University Physics I	5 hours
PHY 2225	University Physics II	5 hours
PHY 3363	Modern Physics.....	3 hours
PHY	Physics electives	6 hours
PHS 3303	History and Philosophy of Science and Technology	3 hours

Required support courses (26 hours)

CHE 1115	General Chemistry I	5 hours
CHE 1125	General Chemistry II	5 hours
CIS 1144	Computer Science I	4 hours
MAT 1195	Analytics and Calculus I.....	5 hours
MAT 2255	Analytics and Calculus II	5 hours
SCF 3432	Physics Through the Eyes of Faith	2 hours

Unified Science Teaching Certification Grades 9 - 12

This certificate will allow an individual to teach any of the beginning sciences; e.g., General Science, Biology I, Chemistry I, or Physics I. An endorsement is required for each area in which an advanced science course is taught; i.e., Biology II or Chemistry II.

The SBU requirements listed below are in addition to the SBU Department of Education's other curriculum requirements for certification.

Minimum Standard Requirements

An endorsement in Biology or Chemistry	42/37 hours
*PHS 3303 History and Philosophy of Science and Technology.....	3 hours
*BIO 2134 General Zoology <i>and</i> BIO 2234 General Botany	8 hours
CHE 1115 <i>and</i> CHE 1125 General Chemistry I <i>and</i> General Chemistry II.....	10 hours
PHY 1115 <i>and</i> PHY 1125 General Physics I <i>and</i> General Physics II	10 hours
PHS 1114 Introduction to Earth Science <i>and</i> PHS 2214 Meteorology	8 hours
BIO 2214 Environmental Biology <i>or</i> *BIO 3334 Ecology	4 hours
*Required prerequisite courses.	

A. **Biology Endorsement** -- a B.S. or B.A. degree in Biology to include coursework in

BIO 1111 Biology Colloquium	1 hour
BIO 2134 General Zoology	4 hours
BIO 2204 <i>and</i> BIO 3304 Human Anatomy & Physiology I <i>and</i> II.....	8 hours
BIO 2234 General Botany	4 hours
BIO 3314 Microbiology	4 hours

BIO 3324	Genetics	4 hours
BIO 3334	Ecology	4 hours
BIO 4224	Cell and Molecular Biology	4 hours
BIO 4471	Seminar in Biology	1 hour
	Biology Electives	4 hours
SCF 3402	Biology Through the Eyes of Faith.....	2 hours

- B. **Chemistry Endorsement** -- a B.S. or B.A. degree in Chemistry to include coursework in
- | | | |
|-----------|--|----------|
| CHE 1115 | General Chemistry I <i>and</i> CHE 1125 General Chemistry II | 10 hours |
| CHE 3002 | Environmental Chemistry | 2 hours |
| CHE 3304 | Organic Chemistry I <i>and</i> CHE 3314 Organic Chemistry II | 8 hours |
| CHE 3345 | Analytical Chemistry | 5 hours |
| CHE 3354 | Instrumental Analysis | 4 hours |
| CHE 3371 | Seminar in Chemistry I <i>and</i> CHE 4471 Seminar in Chemistry II | 2 hours |
| CHE 3364 | Biochemistry | 4 hours |
| BIO 1004 | Principles of Biology | 4 hours |
| MAT 1195 | Analytics and Calculus I | 5 hours |
| *EDU 4522 | Methods of Teaching Science in Middle and Secondary Schools | 2 hours |
| SCF 3402 | Chemistry Through the Eyes of Faith | 2 hours |

- C. Physics and Earth Science Endorsements are **not** available at SBU.

*Techniques/Methods of Teaching Science (EDU 4522) will include: Safety, Lab Techniques, and Research Process Skills.

The student must have a grade point average of at least 2.50 on a 4.00 scale in the subject area.

DEPARTMENT OF MATHEMATICS

Department Chair: Kevin Hopkins

Office: Wheeler 127D - (417) 328-1675

Faculty: Stephen Bowling, John Bryant, Robert Glasgow

Faculty Associate: Wayne DeRossett

<http://www.sbuniv.edu/cosm/math>

Mission Statement

The Department of Mathematics pursues excellence and offers quality instruction from a Christian perspective to non-majors to broaden their mathematical skills and awareness and to majors to prepare them for career success or further study in mathematics.

Vision Statement

The SBU Department of Mathematics pursues excellence by:

- helping students familiarize themselves with mathematical skills and basic mathematical structures necessary for applications and interpretation of life experiences from a Christian perspective;
- seeking to enable students to appreciate graphical presentation of information, logical reasoning, and precision of statement and thought;
- preparing students for continued scholarship and positions of leadership from a Christian perspective in secondary mathematics teaching, graduate study in mathematically related fields, and employment in a global society with many problems that need solutions;
- promoting scholarship of the faculty by encouraging pursuit of advanced degrees, continuing professional development, research, grantsmanship, and professional presentations and publications.

Service Courses

Service courses are offered by the department which do not count toward a mathematics major or minor. These either meet the mathematics general education requirement (see the general education section of the catalog for specific requirements) or help students develop the prerequisite skills for later courses in mathematics or other fields. Placement in a particular mathematics course is determined primarily by college entrance examination scores. These scores may necessitate placement in MAT 0103 PreAlgebra or MAT 0123 Intermediate Algebra (which do not count toward the 128 hour graduation requirement) to enable the student to receive the necessary skills for success in later mathematics courses. Other factors that determine a starting mathematics course are high school background, vocational objectives, previous performance and student interest.

MAT 0103	PreAlgebra	3 hours
MAT 0123	Intermediate Algebra.....	3 hours
MAT 1143	College Algebra	3 hours
MAT 1163	PreCalculus	3 hours
MAT 1173	Discrete Mathematics.....	3 hours
MAT/BUS 1193	Business Calculus	3 hours
MAT 2283	Survey of Mathematics for Elementary and Middle School Teachers I.....	3 hours
MAT 2293	Survey of Mathematics for Elementary and Middle School Teachers II.....	3 hours

Mathematics Major - B.A. Degree

All students graduating from Southwest Baptist University are required to complete at least 128 hours of credit to be earned by completion of the University general education requirements, University graduation requirements, courses within their major and other elective courses.

Core courses (27 hours)

MAT 1195	Calculus I.....	5 hours
MAT 2255	Calculus II	5 hours
MAT 2263	Calculus III.....	3 hours
MAT 3313	Abstract Algebra.....	3 hours
MAT 3323	Linear Algebra.....	3 hours
MAT 4663	Advanced Calculus.....	3 hours
MAT 3332	Symbolic Logic and Set Theory	2 hours
MAT 3343	Probability & Statistics.....	3 hours

Elective courses (10-12 hours), select 4 of the following courses:10-12 hours

MAT 3353	Integrated Mathematics
MAT 3363	Differential Equations
MAT 3372	Math Technologies
MAT 3382	History of Mathematics
MAT/CIS 4433	Numerical Analysis
MAT 4483	Contemporary Geometry

Required support courses (2 hours), select 1 of the following courses:5 hours

CIS 1033	Foundations of Computer Science (meets Computer Science Gen Ed and also serves as support course for Mathematics)
SCF 3422	Mathematics Through the Eyes of Faith

Mathematics Major - B.S. Degree

Same requirements as those for the B.A. degree, except that CIS 1144 or Secondary Certification is required instead of foreign language.

Certification for Teaching High School Mathematics

Students seeking certification with their mathematics major have the following three courses added to the core courses listed above.

MAT 3353	Integrated Mathematics	3 hours
MAT 3372	Math Technologies.....	2 hours
MAT 3382	History of Mathematics	2 hours
MAT 3391	Preparing For Secondary Mathematics Praxis.....	1 hour
(waived if student has already passed their Math Praxis by Spring of their Junior Year)		
MAT 4483	Contemporary Geometry	3 hours

The required support course requirement is the same. These students must also satisfy the other requirements of the department of education for certification.

Minor in Mathematics

Nineteen hours of mathematics consisting of

MAT 1195 Analytcs-Calculus I.....	5 hours
MAT 2255 Analytcs-Calculus II.....	5 hours
Three other non-freshman mathematics courses, excluding	
MAT 2283 Survey of Mathematics for Elementary and Middle School Teachers I	
MAT 2293 Survey of Mathematics for Elementary and Middle School Teachers II	

Required support courses, select 1 of the following courses:

CIS 1033 Foundations of Computer Science	3 hours
CIS 1144 Computer Science I.....	4 hours

Pre-Professional Studies

Engineering

Missouri University of Science and Technology

Southwest Baptist University, in cooperation with the Missouri University of Science and Technology, has a program in which students attend SBU for the first two years before transferring to Missouri S&T to complete a B.S. degree in one of the following engineering programs: aerospace, ceramic, chemical, civil, electrical, geological, metallurgical, mining, nuclear or petroleum engineering or engineering management. A typical SBU program of study is shown below.

First Year -- SBU

Fall

MAT 1195 Analytcs and Calculus I*.....	5 hours
CHE 1115 General Chemistry I	5 hours
ENG 1113 English Composition I	3 hours
UNI 1111 University Seminar.....	1 hour

Spring

MAT 2255 Analytcs and Calculus II.....	5 hours
#CHE 1125 General Chemistry II.....	5 hours
ECO 2033 Principles of Macroeconomics.....	3 hours
UNI 1121 Critical Thinking.....	1 hour
**Electives Humanities/Social Sciences	3 hours

Second Year -- SBU

Fall

MAT 2263 Analytcs and Calculus III.....	3 hours
PHY 2215 University Physics I	5 hours
HIS 22(1-2)3 History of U.S., 1492-1877 <i>or</i> History of U.S., 1877 - Present	3 hours
<i>or</i>	
POL 1113 American Government	3 hours
**Electives Humanities/Social Sciences	6 hours

Spring

MAT 3363 Differential Equations	3 hours
PHY 2225 University Physics II.....	5 hours
#PHY 3233 Mechanics (Statics).....	3 hours
**Electives Humanities/Social Sciences	3 hours

* Students without a satisfactory background in mathematics should take MAT 1163 PreCalculus before taking MAT 1195.

** These electives differ depending on the particular field of engineering; however, they are usually taken from Bible, Communications, Economics, Fine Arts, History, Philosophy, Psychology/Sociology or Literature. Six semester hours must be in upper division courses to give depth to one or two areas.

Some engineering curricula no longer require CHE 1125 *and/or* PHY 3233 at Missouri University of Science and Technology.

NOTE: Since the pre-engineering course of study is a general one at SBU, the pre-engineering student should work closely with the pre-engineering advisor (Dr. Perry A. Tompkins -- Professor of Physics) to facilitate any course modification among specific engineering programs.

Biology Major: Pre-Physical Therapy

The Biology Department at SBU has an undergraduate program of study in which students can prepare for entrance into the SBU Doctor of Physical Therapy (DPT) program. This program of study leads to a B. S. Degree in Biology and incorporates required entrance course work for the SBU DPT program. Other admission requirements for the SBU DPT should be obtained directly from the Department of Physical Therapy, Southwest Baptist University, Bolivar, MO, 65613, (417) 328-1672. Admissions to the SBU DPT program is base on competitive applications. Completion of the Biology Major: Pre-Physical Therapy should not be construed as a guaranteed acceptance into the SBU DPT program, nor does it guarantee acceptance into physical therapy programs not associated with SBU. Students selecting this major are strongly encouraged to keep in close contact with both their Biology Department Advisor and the DPT Recruitment Coordinator beginning with their first year of study. The typical program of study is shown below.

First Year

Fall

UNI 1111	University Seminar.....	1 hour
BIO 1111	Biology Colloquium.....	1 hour
BIO 1004	Principles of Biology	4 hours
ENG 1113	English Composition I #.....	3 hours
MAT 1143	College Algebra #	3 hours
BIB 1013	Old Testament History	3 hours

Spring

UNI 1121	Critical Thinking	1 hour
BIO 2134	General Zoology	4 hours
ENG 2213	English Composition II	3 hours
CIS 1103	Introduction to Computing	3 hours
BIB 1023	New Testament History.....	3 hours
HPE 1162	Found. Physical Fitness/Wellness	2 hours

Second Year

Fall

BIO 2204	Human Anatomy and Physiology I *	4 hours
CHE 1115	General Chemistry I *	5 hours
PSY 1013	General Psychology *.....	3 hours
COM 1103	Fundamentals of Speech Communication	3 hours
SPF 2012	Introduction to Spiritual Formation.....	2 hours

Spring

BIO 3304	Human Anatomy and Physiology II *	4 hours
CHE 1125	General Chemistry II *	5 hours
HIS 22(1-2)3	History of the United States, 1492-1877 or 1877 - Present.....	3 hours
	Cultural Studies Elective	2 hours
	Elective.....	3 hours

Third Year

Fall

PHY 1115	General Physics I *	5 hours
BIO 2234	General Botany	4 hours
BIO 3012	Methods in Scientific Research.....	2 hours
PSY ___3	Psychology Elective *	3 hours
FAR 10(0-3)3	Fine Arts Elective	3 hours

Spring

PHY 1125	General Physics II *	5 hours
BIO 4404	Pathophysiology **	4 hours
PSY 3243	Elementary Statistics *	3 hours
Electives.....		2 hours

Fourth Year**Fall**

BIO3324	Genetics	4 hours
BIO4471	Biology Seminar	1 hour
POL 1113	American Government.....	3 hours
Biology Elective		4 hours
Electives		3 hours

Spring

BIO3334	Introduction to Ecology	4 hours
BIO4224	Cell and Molecular Biology	4 hours
ECO 2003	L.I.F.E. Economics	3 hours
Electives.....		6 hours

Placement in this course depends on ACT scores

* Prerequisite for DPT

** Strongly recommended but not required for DPT

^ Submit completed DPT graduate school application packet including GRE scores

Pre-Health Programs

Although SBU does not offer majors in pre-health programs, students can become well-qualified for acceptance into one of the professional schools of the health sciences. Plans of study are available for students pursuing entry into schools of dentistry, medicine, osteopathy, optometry, veterinary medicine, pharmacy, physicians assistant, or medical technology as well as other areas. Pre-professional programs for the health sciences vary in length from one to four years depending on the specific area of interest. Also, admission requirements are so varied that it is not possible to give detailed plans of study for each area of interest. Students need to be aware of the specific admission requirements of the professional school(s) to which they intend to apply and to select a plan of study accordingly. Students are strongly urged to work closely with their faculty academic advisors and the SBU Pre-Health Careers Committee on the selection of courses, the sequence in which the courses are taken, and on the fulfillment of the admission requirements of the chosen professional program(s).

Students applying to professional schools need to be aware of the deadlines established by the professional schools and testing organizations for submitting application materials and taking admissions examinations. The student is responsible for meeting these deadlines and for any fees associated with the application process or admission testing.

Students interested in pursuing a pre-health program at SBU should identify themselves with the SBU Pre-Health Careers Committee at the earliest possible date. The Pre-Health Careers Committee serves to counsel students and to assist them in obtaining catalogs, literature and other information pertinent to professional school admission requirements and admission testing procedures. Once the requirements for admission to a professional program have been met, the Pre-Health Careers Committee will, at the request of the student, interview the student and write letters of recommendation. For additional information on pre-medicine, pre-dentistry, pre-optometry, pre-osteopathy, pre-veterinary medicine, pre-pharmacy, pre-physicians assistant, and medical technology studies contact the Chairman, SBU Pre-Health Careers Committee, College of Science and Mathematics, Southwest Baptist University, Bolivar, MO, 65613, (417) 328-1659.

Students interested in a career in nursing should contact the St. John's College of Nursing and Health Sciences, 4431 South Fremont St., Springfield, MO, 65804, (417) 820-2069.

Medical Technology - B.S. Degree

Southwest Baptist University, in cooperation with the Cox School of Medical Technology, Cox Health Systems, Springfield, Missouri, offers a four-year program leading to a B.S. degree in medical technology. The fourth year of this work is taken at Cox Medical Center South (or an approved hospital or school of medical technology).

Upon satisfactory completion of this work, students are certified in this field by passing the examination given by the American Society of Clinical Pathologists.

1. Students must have senior standing (completed 96 semester hours of college credit) before admission to a National Accrediting Agency for Clinical Laboratory Science (NAACLS) approved school of medical technology.
2. Students must complete the SBU general education and graduation requirements.
3. At least the last 30 hours of the 96 hours of college credit must be taken at SBU.
4. Admission to a school of medical technology is determined by the national requirements and approval of the educational coordinator of the school of medical technology concerned.
5. Upon certification by the educational coordinator of an NAACLS approved school of medical technology that the courses in medical technology have been completed satisfactorily, SBU will grant a minimum of 30 semester hours of upper-division credit for the work.

The following SBU courses are required before admission to the medical technology program:

BIO 1004	Principles of Biology	4 hours
BIO 2204	Human Anatomy and Physiology I.....	4 hours
BIO 3304	Human Anatomy and Physiology II	4 hours
BIO 3314	Microbiology.....	4 hours
BIO 3322	Introduction to Immunology	2 hours
BIO 3324	Genetics	4 hours
BIO/CHE 3364	Biochemistry	4 hours
CHE 1115	General Chemistry I <i>and</i> CHE 1125 General Chemistry II	10 hours
CHE 3304	Organic Chemistry I <i>and</i> CHE 3314 Organic Chemistry II.....	8 hours
CHE 3345	Analytical Chemistry.....	4-5 hours
<i>or</i>		
CHE 3354	Instrumental Analysis	

The following SBU courses are recommended as electives before admission to the medical technology program:

BIO 3384	Histology.....	4 hours
BIO 3394	Pathogenic Microbiology	4 hours
PSY/SOC 3243	Elementary Statistics	3 hours
MGT 4043	Organizational Behavior and Theory <i>or</i>	
FIN 3003	Personal Financial Planning.....	3 hours

The following courses (with associated SBU credit hours awarded) are taken by students accepted into the Cox School of Medical Technology during the senior year:

MTC 401	Clinical Biochemistry.....	10 hours
MTC 402	Clinical Microscopy.....	2 hours
MTC 403	Clinical Hematology & Coagulation	7 hours
MTC 404	Diagnostic Immunology	4 hours
MTC 405	Clinical Microbiology	7 hours
MTC 406	Immunoematology.....	4 hours
MTC 407	Special Topics in Medical Technology.....	1 hour

The Darrell R. Strait Center for the Integration of Science and Christian Faith

Center Director: Hillary Glauser-Patton

Office: Wheeler 114/H - (417) 328-1668

Faculty: Stephen Bowling, Craig Endres, Robert Glasgow, Craig Masters,
John Patton, Rosalyn Snellen, Perry Tompkins

<http://www.sbuniv.edu/cosm/strait>

The Darrell R. Strait Center for the Integration of Science and Christian Faith is an academic center housed within the SBU College of Science and Mathematics and named in memory of our beloved colleague, Dr. Darrell R. Strait. Dr. Strait was a long-time employee of the University, senior professor of chemistry and former Dean of the College of Science and Mathematics. The Darrell R. Strait Center is home to an interdisciplinary program (major and minor programs) focusing on the integration of science and Christian faith. In this Center, students study the history and philosophy of science, Biblical hermeneutics and the integration of science and Christian faith. Working from the authority of Scripture and the assertion that Christianity is true, these

programs enable students to establish and validate Biblically based personal belief systems on the interrelations between science and Christian faith.

The baccalaureate degree in Integration of Science and Christian Faith requires a minimum of 128 semester hours of credit to be earned by completion of the University general education and graduation requirements, the Integration of Science and Christian Faith curriculum (shown below) and a second major in any other undergraduate degree program offered by SBU. Courses taken toward completion of the major may also be counted toward completion of the general education requirements or a second major in another degree program. A Second Major in any degree program at SBU is required with this major.

Integration of Science and Christian Faith Major - B.S. degree

General Education Requirements	42 hours
Graduation Requirements	10 hours
Required Courses for the Major	
CHE 1115 General Chemistry I <i>and</i> CHE 1125 General Chemistry II	10 hours
BIO 1004 Principles of Biology <i>and</i> 4 hours upper division biology	8 hours
PHY 1115 General Physics I <i>or</i> PHY 2215 University Physics I	5 hours
MAT 1195 Analytcs and Calculus I <i>or</i>	
PHY 1125 General Physics II <i>or</i> PHY 2225 University Physics II.....	5 hours
BIB 2093 Methods of Biblical Interpretation	3 hours
PHI 2013 Philosophical Foundations for a Christian Worldview	3 hours
PHS 3303 History and Philosophy of Science and Technology	3 hours
SCF 3402 Biology Through the Eyes of Faith*	2 hours
SCF 3412 Chemistry Through the Eyes of Faith**	2 hours
SCF 3422 Mathematics Through the Eyes of Faith***	2 hours
SCF 3432 Physics Through the Eyes of Faith**	2 hours

*Prerequisite to this course is completion of the general education requirement in life science.

**Prerequisite to this course is completion of the general education requirement in physical science.

***Prerequisite to this course is completion of the general education requirement in mathematics.

Minor in Integration of Science and Christian Faith

To obtain a minor in Integration of Science and Christian Faith, students must complete the following 17 semester hours of course work:

BIB 2093 Methods of Biblical Interpretation.....	3 hours
PHI 2013 Philosophical Foundations for a Christian Worldview	3 hours
PHS 3303 History and Philosophy of Science and Technology.....	3 hours
SCF 3402 Biology Through the Eyes of Faith.....	2 hours
SCF 3412 Chemistry Through the Eyes of Faith	2 hours
SCF 3422 Mathematics Through the Eyes of Faith	2 hours
SCF 3432 Physics Through the Eyes of Faith.....	2 hours