Science and Mathematics Education—SME

855 Environmental and Behavioral Biology Laboratory
Summer. 3 credits. Spring: Given only at W.K. Kellogg Biological Station. R: Secondary certification in biology, 3 years teaching experience. R: Approval of college. SA: NSC 855
Biotic and abiotic features of lakes, streams, forest ecosystems, and microbial ecosystems.

856 Environmental and Behavioral Biology Laboratory
Summer. 3 credits. Summer: Given only at W.K. Kellogg Biological Station. R: Secondary certification in biology, 3 years teaching experience. R: Approval of college. SA: NSC 856
Laboratory and field examinations of lake, stream and forest ecosystems.

860 Problem Solving Techniques in Physical Science
Summer. 3 credits. RB: (NSC 861 and NSC 862 and NSC 863) Secondary certification in chemistry or physics or earth science or physical science, 3 years teaching experience. R: Approval of college. SA: NSC 861
Intensive lecture and laboratory study of basic chemistry from a modern viewpoint.

861 Chemistry for Teachers
Summer. 2 credits. RB: Secondary certification in chemistry or physics or earth science or physical science, 3 years teaching experience. R: Approval of college. SA: NSC 861
Intensive lecture and laboratory study of basic chemistry from a modern viewpoint.

862 Physics for Teachers
Summer. 2 credits. RB: Secondary certification in chemistry or physics or earth science or physical science, 3 years teaching experience. R: Approval of college. SA: NSC 862
Intensive lecture and laboratory study of basic physics from a modern viewpoint.

863 Earth Science for Teachers
Summer. 2 credits. RB: Secondary certification in chemistry or physics or earth science or physical science, 3 years teaching experience. R: Approval of college. SA: NSC 863
Intensive lecture and laboratory study of basic earth sciences from a modern viewpoint.

864 Interdisciplinary Seminar in Physical Science
Summer. 2 credits. RB: (NSC 860) R: Approval of college. SA: NSC 864
Interrelationships of the physical sciences. The role of society in regulation of science to technology transfer.

870 Teaching College Science
Spring. 2 credits. RB: One year of graduate study in a biological or physical science. R: Approval of college. SA: NSC 870

889 Research for Inservice Teachers
Fall, Spring. Summer. 1 to 8 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to inservice K-12 teachers with baccalaureate degrees. R: Approval of college. SA: NSC 889
Research in faculty laboratories. Oral and written presentations.

901 Frontiers in Biological Science
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 36 credits in all enrollments for this course. RB: Secondary certification in chemistry or physics or earth science or physical science or biology, 3 years teaching experience. R: Approval of college. SA: NSC 901
Weekend workshops with research faculty exploring background and latest findings in their area of research.

902 Frontiers in Physical Science
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 40 credits in all enrollments for this course. RB: Open only to students with secondary teacher certification in chemistry or physics or earth science or physical science or biology and 3 years of teaching experience. R: Approval of college. SA: NSC 902
Weekend workshops with research faculty exploring background and latest findings in their area of research.

SMALL ANIMAL CLINICAL SCIENCES—SCS

Department of Small Animal Clinical Sciences
College of Veterinary Medicine

511 Veterinary Radiology
Fall. 1(1-0) R: Open only to graduate-professional students in College of Veterinary Medicine.
Principles of veterinary radiology, radiation safety, and normal radiologic anatomy.

611 Diagnostic Imaging Clerkship
Fall, Spring. Summer. 3 credits. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in the College of Veterinary Medicine. Approval of department. Participation in the instruction of VM 557 (Operative Surgery), with preparation for the laboratory and discussion after the laboratory. Performance of additional surgical procedures, case discussions, rounds, and anatomy review. Approved independent study project required.

612 Problems in Diagnostic Imaging Clerkship
Fall, Spring. Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (SCS 611) Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine. Advanced diagnostic radiography, ultrasound imaging, and magnetic resonance imaging.

613 Diagnostic Ultrasound Clerkship
Fall, Spring. 3 credits. RB: (SCS 611) Completion of semester 5 of the professional veterinary program. R: Open only to fourth year graduate-professional students in the College of Veterinary Medicine. Principles of ultrasound physics, ultrasound scanning techniques, and interpretation of ultrasound imaging.

625 Small Animal General Medicine Clerkship
Fall, Spring. Summer. 3 credits. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in College of Veterinary Medicine. Diagnostic and treatment services for routine and emergency outpatients.

626 Small Animal Soft Tissue Surgery Clerkship
Fall, Spring. Summer. 3 credits. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in College of Veterinary Medicine. Diagnosis and preoperative, surgical, and postoperative care of patients requiring routine elective and major soft-tissue surgical procedures.

630 Spay/Neuter Clerkship
Fall, Spring. Summer. 3 credits. RB: (SCS 626 and SCS 648) Completion of semester 5 of the graduate professional veterinary program. Ovariohysterectomy or ovariectomy. Aspects of pre- and post-operative management and anesthesia.

636 Problems in Soft Tissue Surgery Clerkship
Fall, Spring. Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (SCS 626) R: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine. Soft tissue surgery problems.

637 Operative Surgery Clerkship: Instruction and Review
Fall. 3 credits. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in the College of Veterinary Medicine. Approval of department. Participation in the instruction of VM 557 (Operative Surgery), with preparation for the laboratory and discussion after the laboratory. Performance of additional surgical procedures, case discussions, rounds, and anatomy review. Approved independent study project required.
SCS—Small Animal Clinical Sciences

640 Cardiology Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in College of Veterinary Medicine.
Diagnosis and medical, and surgical treatment of small animal thoracic and cardiovascular disorders.

641 Ophthalmology Clerkship
Fall, Spring, Summer. 3 credits. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in College of Veterinary Medicine.
Ophthalmic evaluation of all species. Diagnosis and medical and surgical treatment of ophthalmic disease.

642 Zoo and Wildlife Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in College of Veterinary Medicine.
Zoo animal and wildlife medicine and surgery.

643 Neurology Clerkship
Fall, Spring, Summer. 3 credits. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in College of Veterinary Medicine. Not open to students with credit in SCS 666.
Diagnosis and medical and surgical treatment of small animal neurological disorders.

644 Dermatology Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in College of Veterinary Medicine.
Diagnosis and treatment of small animal dermatological disorders.

645 Intensive Care Unit Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in College of Veterinary Medicine. Not open to students with credit in SCS 622.
Intensive care and management of critically ill small animals.

646 Small Animal Orthopedic Clerkship
Fall, Spring, Summer. 3 credits. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in the College of Veterinary Medicine.
Diagnosis and preoperative, surgical, and postoperative care of patients requiring routine and major orthopedic surgical procedures.

647 Small Animal Internal Medicine Clerkship
Fall, Spring, Summer. 3 credits. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in the College of Veterinary Medicine.
Diagnosis and therapy for complicated medical cases of small animals.

648 Anesthesia Clerkship
Fall, Spring, Summer. 3 credits. RB: Completion of semester 5 of the professional veterinary program.
Pre-anesthesia evaluation, induction, monitoring, and recovery of small animal patients requiring routine and major surgical procedure.

650 Advanced Cardiology
Spring. 3 credits. RB: (SCS 640) Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Advanced cardiology practice.

651 Advanced Comparative Ophthalmology Clerkship
Spring. 3 credits. RB: (SCS 641) Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Neurologic problems.

652 Problems in Neurology Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the professional veterinary program. R: Approval of department.
Problem-oriented approach to complex ocular disease processes at the gross and microscopic levels.

653 Problems in Internal Medicine Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (SCS 647) Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Internal medicine problems.

654 Problems in Surgery Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (SCS 648) Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Advanced practice of anesthesiology in the teaching hospital setting.

655 Problems in Orthopedic Surgery Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (SCS 649) Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Orthopedic surgery problems.

656 Problems in Small Animal Surgery
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (SCS 650) Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.

657 Problems in Anesthesiology Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (SCS 651) Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.

658 Problems in Clinical Nutrition for Small Animals
Spring. 3 credits. RB: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Principles of clinical nutrition and dietetics for dogs and cats: diet evaluation, nutritional assessment, critical care nutrition support, and clinical case evaluations.

659 Veterinary Molecular Biology Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Concepts and techniques of veterinary molecular biology.

660 Problems in Small Animal Clinical Sciences Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Special problems.

661 Small Animal Specialty Practice Clerkship
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in the College of Veterinary Medicine.
Supervised, off-campus, specialty practice experience in an assigned veterinary practice or other school of veterinary medicine.

662 Emergency and Critical Care Medicine
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of semester 5 of the professional veterinary program. R: Approval of department.
Admission, triage, diagnosis, treatment, and discharge of patients entering an emergency service. Daily instructional rounds.

663 Problems in Small Animal Surgery
Fall, Spring, Summer. 1 to 9 credits. A student may earn a maximum of 15 credits in all enrollments for this course. R: Open only to graduate students in Small Animal Clinical Sciences.

664 Small Animal Seminar
Fall, Spring, Summer. 1(1-8) A student may earn a maximum of 3 credits in all enrollments for this course. R: Open only to graduate students in Small Animal Clinical Sciences.

665 Master's Thesis Research
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to graduate students in Small Animal Clinical Sciences.
Master's thesis research.