Doctor of Veterinary Medicine Professional Program

Fourth Year Professional Program

Fourth Year Professional Courses

Required course work for the fourth year includes three hours of Clinical Conference and successful completion of the required and elective blocks of clinic clerkship. Fourth year students must complete required and elective rotations that vary depending on the students selected focus area. Students must complete 43 credits in the senior year: 40 credits of clinical rotations and three credits in Clinical Conference. The clinic year consists of 24 blocks, two to three weeks in length, with up to four vacation blocks and three extramural experiences (Food Animal-focused students are required to take four extramural experiences). A total of 168 credit hours are required for graduation. Clinical Conference presentations are required of each senior.

VMC 996 - Advanced Avian Clinical Medicine - Students will work with teaching birds to develop skills in avian handling, diagnostic sample collection, anesthesia and radiology. Cadavers will be used to teach orthopedic and soft tissue surgical procedures. Students and faculty will spend approximately 5 days in the field, working with psittacine birds, waterfowl and raptors at Sylvan Heights Waterfowl Park in Scotland Neck, N. C. and at the Carolina Raptor Center in Charlotte, N. C. Restricted to senior DVM students. Prerequisite: VMC 991 Basic Companion Avian Medicine Selective or VMC 991 Advanced Avian Medicine Selective

VMC 959 - Advanced Primate Medicine - This rotation is designed to provide senior veterinary students with clinical experience in nonhuman primate medicine. Student will gain practical experience in the diagnosis, treatment, and prevention of disease in captive research primates maintained in research facilities. Students participate in formal rounds, autodidactic exercises, and case management at the Primate Center at Wake Forest University in Winston-Salem, North Carolina. Housing is the student's responsibility -- see Student Services for contact info. Prerequisite: VMC 991 Primate Selective. Must have instructor's approval.

VMC 958 - Advanced Prosimian Medicine - This rotation is designed to provide senior veterinary students with clinical experience in prosimian medicine. Students will gain practical experience in the diagnosis, treatment, and prevention of disease in captive prosimians maintained in reasearch facilities. Students participate in formal rounds, autodidactic exercises, and case management at the Duke Lemur Center. Prerequisite: VMC 991 Primate Selective. Must have instructor's approval.

VMC 986 - Advanced Small Animal Medicine – This course provides a higher level experience to diagnosis and management of companion animals with complex medical problems. Students may choose to concentrate on particular
aspects of internal medicine. Students are not required to participate in emergency/intensive care unit duty. Prerequisite: VMC 971 Companion Animal Medicine or VMC 954 Companion Animal Medicine for Food Animal/Equine Students.

**VMP 975 - Advanced Topics in Veterinary Anatomic Pathology** – This is a two-week senior veterinary clinical rotation that provides students with additional, focused experience in veterinary anatomic pathology. Students have the option of rotating through necropsy service and surgical biopsy service for two weeks to gain additional experience in pathology similar to VMP 977, the prerequisite for this course. Students have the option of designing a specialized pathology experience with the guidance of an approved pathology faculty member.

**VMC 987 - Aquatic Medicine** – This course is designed as an elective clinical block rotation in field services, in the final year of the professional DVM curriculum. Students electing the course would have successfully completed the two theoretical/laboratory courses in special species medicine providing the foundation for participation in this course. It is the only clinical course offering hands on experience with medical care delivery to aquatic species.

**VMC 972 - Cardiology** – This course will provide training and experience in the following:

1. Obtaining a thorough history and performing a complete examination, with particular emphasis on the cardiovascular and respiratory systems.
2. Identifying, defining, and prioritizing health problems.
3. Developing and initiating rational diagnostic and therapeutic plans communicating these plans and results to the client.
4. Performing various diagnostic procedures (e.g., blood pressure measurement, ECG, thoracic radiographs, transtracheal aspiration, etc.
5. Interpreting results of diagnostic tests and determining their importance to the patient and client.
6. Communicating with clinicians, clients, veterinary technicians and staff, fellow students, and referring veterinarians in an appropriate and effective manner.

In addition, this course will provide the opportunity to learn the presenting signs, historical findings, breed predilections, methods of diagnosis, and medical and surgical interventions for the most commonly seen cardio respiratory conditions.

**VMB 977 – Clinical Anesthesia** – Students engage in the daily clinical service responsibilities of the CVM-VTH Anesthesia Section in the role of anesthetists assigned to the care of client-owned animals. The objective of this clinical course is to enable each student to achieve their maximum potential as neophyte anesthetists having limited experience. Student activities are supervised and conducted by CVM faculty anesthesiologists, and VTH staff anesthesia technicians. Supporting activities related to delivering clinical service include attending clinical rounds and case discussions, and oral presentation of a critical review of a recently published research paper relevant to anesthesia and it’s supporting basic sciences. **Every senior must take this core course.**

**VMB 978 - Clinical Behavior and Nutrition** - This clinical rotation will provide interested students with the opportunity to gain experience in both behavior and nutrition. During the week spent at the Behavior Medicine Service, students will participate in the diagnosis and treatment of behavior problems in companion animals. During the week spent at the Nutrition Service, students will develop and initiate nutrition support plans for hospitalized and healthy companion animals. Relevant nutrition support skills will be practiced.

**VMC 995 – Clinical Conference** – Each senior student is required to do a 25 minute presentation during their senior year. The presentation may involve a case report, series of cases, or epidemiological study. Retrospective study of a disease or syndrome including data drawn from other institutions or published findings may be used as well as topics of general interest to veterinary medicine of an innovative nature. Will be registered for in the summer, fall, and spring.

**VMP 977 – Clinical Laboratory and Necropsy** – **This is a core course and required for all seniors.** The course objective is to have each student learn the following:
1. Perform a systematic post-mortem examination on each of the common domestic species of animals, distinguishing between normal, autolytic, and pathological changes.
2. Properly collect and handle for analysis, specimens of exudates, gastrointestinal contents, tissue, and fluids obtained from both live and dead animals.
3. Properly conduct and evaluate clinical laboratory tests on specimens from clinical and necropsy laboratory cases.
4. Be able to use diagnostic bacteriology, mycology, virology, surgical pathology and pharmacology services effectively; i.e., to:
   1. Select laboratory services intelligently, (b) collect and care for specimen properly for submission to specific laboratories or for evaluation, (c) microscopic evaluation of specimens and interpretation, (d) understand selected laboratory techniques and how they are used for future application, and (e) interpret laboratory results correctly.

**VMP 978 – Clinical Pathology, Parasitology, and Immunology** – This is a two credit course. It is a predominantly practical-based approach to more in-depth learning of the above subjects in a clinical setting. There will be different instructors for each subject area, with corresponding syllabuses. General expectations for the course are that you have thoroughly reviewed (prior to class) and understand any and all notes you have received in previous courses, e.g., sophomore hematology, cytology, enzymology, etc. You will be building upon this knowledge base, not re-learning it This is a core course and required for all seniors.

**VMC 967 – Clinical Veterinary Dentistry** – Will participate in examination, admission, diagnosis, treatment, discharge, and follow-up of patients in dentistry service. Take a clinical history, perform a physical examination, develop appropriate diagnostic plan, discuss the plan with the service’s clinicians, and participate in formulation of treatment protocol. Service treats patients Monday – Thursday. Friday reserved for overflow, emergencies, research and teaching. Students given prepared lectures on dental procedures and diseases, and will be allowed to perform supervised procedures on cadavers. (No animals euthanized for this purpose.)

**VMC 983 Clinical Veterinary Dermatology** – Dermatological disease will represent a significant proportion of your case load, particularly in companion animal practice. Most of the patients that you will see have chronic relapsing disease that can be frustrating, and often costly for the owner. Therefore, whilst an accurate diagnosis represents the first step in dealing with a case, the challenge in this field of medicine is to successfully manage cases in the long term. This requires good and open communication with the client as well as regular patient evaluation.

Most of the diagnostic techniques employed in dermatology are very simple and do not require expensive equipment or excessive amounts of time. The key to successful dermatological practice is to use these tools appropriately to recognize conditions such as parasitic infestations and bacterial or yeast infections for which there is a specific course of treatment. It specializes in the diagnosis and management of chronic ear disease and immunological dermatoses such as autoimmune skin diseases, food reactions and atopic dermatitis. The good practitioner however, recognizes that cutaneous manifestations may be a reflection of internal disease and a thorough systemic evaluation is also required. When studying the skin there is one big advantage, it is on the outside.

**VMC 982 – Clinical Veterinary Ophthalmology** – The purpose of the ophthalmology course is to acquaint the student with examinations, diagnostics and therapeutic practices, and principles of clinical veterinary medicine. There will be direct supervision by faculty and house officers. Attendance is required at weekly clinical rounds, general medicine rounds, and the patient rounds and mini-seminars conducted within the service. Irregular and/or long hours may be required. Students will be expected to be neatly dressed, well groomed, and conduct themselves in a professional manner at all times.

**VMB 962 – Clinician Scientist Research Experience** – This research rotation is designed to continue the research training and experience that Clinician Scientist Focus Area students have gained during their summer research experience and any other additional research they have done during the first three years of their DVM curricular experience. Since the students taking this rotation will be doing independent research, albeit under the direction of a faculty principal investigator, the particulars of the course syllabus will vary for each student. However, the students will all be expected to perform
independent, guided research projects which involve some type of wet lab experience or statistics/bioinformatics approaches. The students will also be intimately involved in the design, execution and interpretation of laboratory experiments, and/or in the design and implementation of any retrospective clinical studies.

**VMC 971 – Companion Animal Internal Medicine** – 1. Obtain a thorough history and perform a complete physical examination. 2. Identifying, defining, and prioritizing problems. 3. Developing and initiating rational diagnostic and therapeutic plans. 4. Performing certain diagnostic and therapeutic procedures. 5. Interpreting results of diagnostic tests, and determining their importance to the patient. 6. Verbal and written communication with clinicians, clients, veterinary techniques, fellow student veterinarians, and referring veterinarians. 7. Determining the point at which it is time to refer a case to a colleague for “another look”, or to a referral center for specialized diagnostic testing or treatment. 8. Understanding how cases management in private practice compares with referral practice. 9. Approaching issues regarding euthanasia; your decision-making, assisting the owner. This course is a two-block rotation only beginning odd blocks.

**VMC 973 – Companion Animal General Surgery** – The student will be provided an opportunity to apply and practice skills, techniques and principles learned in pre-clinic courses by: 1. Obtaining histories and performing physical examinations on animals with surgically related diseases. 2. Deciding an appropriate objective database for diagnosis and therapy reasons. 3. Participating in and performing surgery on routine and complex surgical cases commensurate with the animal’s condition and the student’s ability. 4. Participating in the communication process with the client and referring veterinarian. 5. Demonstrate the ability to research a surgical disease, define a treatment for the disease, decide if the treatment can be performed in a practice setting or if referral is indicated, and give a prognosis for the disease. This skill must be demonstrated in the SOAP for all referral cases. Additional diseases may be assigned.

**Companion Animal Orthopedic Surgery** - The primary objective is to develop the skills and knowledge that are necessary for the diagnosis and management of orthopedic problems in your patients. Because it is not possible to cover all this in two weeks, the focus will be on developing your communication and diagnostic skills; your alternatives for their management. An understanding of the anatomy, sterile technique and the surgical procedure will be expected when assisting. You will be expected to formulate management plans for the postoperative period. You will have primary responsibility for case management, client communication, discharge orders and, in select cases, communication with the referring DVM.

**VMC 954 – Companion Animal Medicine for Food Animal Students** – Small animal medicine clinical rotation emphasizing the disciplined detection, prioritizing and planning for therapy of medical diseases in small companion animals. Development of medical judgment and the use of the problem oriented medical record is stressed. This course is intended for DVM students in the food animal focus area.

**VMC 976 – Critical Care Medicine Small Animals** – This is a two-week elective in the small animal hospital, available throughout the entire year. This service will give senior students the opportunity to assess and treat after-hours emergencies in cats and dogs. The students will also be responsible for communications with clients and referring veterinarians. **This elective is available only for fourth year students in the small animal focus area.**

**VMP 979 Epidemiology** – The main goal is to provide senior veterinary students with the opportunity for pursuing a focused research topic in the area of veterinary epidemiology and population medicine under the direction of consenting faculty. The exact direction and scope of the topic is agreed upon between the instructor, the student and the course coordinator. This course is offered only by the permission of the participating instructor(s) and the course coordinator. The instructor and the student will work out the type of project, what exact objectives are to be met and how the success of obtaining those objectives will be evaluated. The objectives and methods of evaluation of performance will be negotiated between the veterinary student and the instructor and put into writing in the form of a Plan of Action PRIOR to course permission being granted by the course coordinator. No one textbook is required for this course.

**VMC 966 – Equine Emergency and Critical Care** – This course is a two week elective rotation for 4th year veterinary
students only. The elective is designed as an intensive learning experience and skill development in the assessment and management of equine emergency patients. Students will participate in daily topic rounds discussions about critical care topics. Students will participate in the evaluation and monitoring of in house critical care patients as well as admit new emergencies. Students will participate in the medical and surgical management of these patients.

**VMC 978 Equine Lameness** – Development and use of problem-solving skills in the diagnosis, treatment, and management of lameness and related topics, eg, farriery, orthopaedic surgery, diagnostic imaging, race training, etc, in the performance horse. Overnight/weekend field trips may be included in course requiring fees other than, or in addition to, laboratory and computer course fees.

**VMC 979 Equine Medicine** – Students are responsible for all aspects of patient care and are expected to be dedicated to their patients. Frequent and careful observation of the patients, attention to detail, diligent record keeping, accuracy in formulating and carrying out a treatment plan, and use of common sense are expected. The earlier you note potential problems, the earlier and easier they can be resolved. Irresponsibility, carelessness, lack of accuracy, untruthfulness, or a poor attitude will not be tolerated.

**VMC 968 – Equine Orthopedic Surgery and Lameness** – Application of problem solving skills and the art, science, and practice of equine orthopedic surgery and lameness in the veterinary teaching hospital setting.

**VMC 977 Equine Preventative Health Care** – The overall objective of this course is for students to become more comfortable with preventative health care and common problems in equine practice. This will be accomplished by performing the preventative health care and routine work for state-owned horses at the NCSU Equine Educational Unit, Veterinary Equine Research Center in Southern Pines, Caledonia, and TAU, and for horses owned by clients that have agreed to participate in the rotation. In addition, we may spend some time at the State Fair Horse Show.

**VMC 993 Equine Special Topics** – This course is offered to students that have already signed up to take any two of the following courses: Preventative Health Care, Equine Medicine, Equine Surgery, or Equine Theriogenology. The course is designed to give additional experience in equine-oriented clinical services at NCSU. Students will not be able to participate in this block off campus, unless working directly with a NCSU faculty member. A faculty mentor must be identified within one month of signing up for this course and a written proposal of activities planned submitted to Dr. Sam Jones. **Instructor Permission Required**

**VMC 975 Equine Surgery** – Application of problem solving skills and the art, science, and practice of equine surgery, including lameness, in the veterinary hospital setting. 1. Conduct a comprehensive physical examination of the horse, including examinations for lameness. 2. Formulate plans for the use of ancillary diagnostic procedures for the diagnosis of the common surgical diseases of the horse. 3. Select routine preoperative, intraoperative, and postoperative treatment procedures for horses with surgical diseases. 4. Perform routine radiographic and ultrasonographic examinations of the forelimbs and hind limbs for diagnosis of lameness in the horse. 5. Develop client communication skills needed for the practice of equine surgery.

**VMC 955 – Extramural Experiences in Laboratory Animal Medicine** – DVM students will have the opportunity to undertake a two-week rotation in an approved laboratory animal (LA) facility under the supervision of a laboratory animal veterinarian. This opportunity will meet the need to increase "hands on" experience as part of focus area requirements or recommendations. At a laboratory animal facility, the rotation will most likely consist of the opportunity to "shadow" LA veterinarians in medical rounds and the provision of clinical services.

**VMP 994 Extramural Experience in Pathology** – This is a two-week externship experience in pathology. The student will arrange an extramural experience in an academic, diagnostic, government, industrial, or zoological/wildlife laboratory setting under the supervision of a board certified veterinary anatomical or clinical pathologist.

**VMC 994 Extramural Experiences in Small Animal** – This is a recommended rotation designed to expand opportunities
for senior veterinary students to participate in small animal private practice a) enhance and learn clinical and technical skills, b) develop effective client communication skills and time management, and c) observe elements of small business management, including personnel involved and professional financial interactions with private clients. Students will work at a private or corporate veterinary practice under the direct supervision of a licensed veterinarian engaged in small animal practice. Travel and lodging expenses are variable depending on the site of the experience. Participation is contingent on approval by student’s advisor and course coordinator. Students are responsible for arranging their extramural experiences and accommodations.

**VMC 963 – Extramural Experiences in Zoological Medicine** – This elective senior year rotation allows students to obtain clinical, laboratory, field, and research experiences in zoological medicine that augment the basic rotations in the zoological medicine focus area. Students can customize their training through participation in a variety of opportunities including epidemiology projects, other basic or clinical research projects, and externships involving captive and free-ranging wildlife & zoo species.

**VMP 971 Food Animal Diagnostics for Disease Diagnosis, Control, and Population Surveillance** – This course is not a general educational requirement. Priority is given to students in Food Animal Focus Area. Students in Mixed Animal Focus Area or special case Epidemiology Focus Area students can enroll (if space remains) with the approval of Course Coordinator if they meet the criteria stated in the course prerequisites which are successful completion of Veterinary Program to date, students signed up in Food Animal Focus Area or Mixed Focus Area, or special-case students approved by Course Coordinator and have demonstrated commitment to, knowledge of, and ability to work within an area of food animal veterinary medicine by some or all of the following: prior undergraduate coursework, *summer work experiences, and/or consistent enrollment and good performance in food animal selectives.*

**VMP 976 - Food Animal Pharmacology** - This course will outline the basic principles of pharmacology and therapy of the major diseases of ruminants, swine and poultry. Students will be expected to develop a thorough understanding of how properly to use drugs in food animal species and should be able to develop a treatment program for most major livestock diseases. The course will be restricted to students in the food animal and mixed animal focus areas.

**VMP 974 - Food Supply Veterinary Medicine** - This two-week course provides exposure to the clinical principles of food supply veterinary medicine. It is primarily intended for individuals who are not in the Food Animal Focus Area. Ruminant, swine and poultry faculty provide an overview of the animal industries and production practices, as well as exposure to basic veterinary knowledge and clinical skills. Prerequisites may include consent of instructor.

**VMC 939 General Limited Small Animal Practice** - Will expose clinical year veterinary students to a general small animal veterinary practice. There will be several areas of focus: learning clinical skills relevant to a general veterinary practitioner; developing strong problem solving abilities; developing the strong communication skills necessary to interact effectively with clients, colleagues and staff, incorporating; and conducting behavior evaluations of pets during wellness examinations. Enrollment in this course is limited to students in the DVM professional program.

**VMC 981 – Laboratory Animal Medicine** - The block will provide practical experience in the diagnosis, treatment and prevention of diseases of laboratory animals. It will include special study of diseases of laboratory animals and the management of laboratory animal facilities. Opportunity to perform surgical procedures on common laboratory animals will be provided in a series of surgical labs. There will be field trips to other laboratory animal resource facilities within the Research Triangle Park and surrounding areas. The student will present a seminar on a selected topic for critical appraisal by students and faculty.

**VMP 990 Large Animal Community Classroom** – Senior DVM students will have the opportunity to undertake an elective rotation in an approved practice externship in a large animal practice a) food animal/rural or b) equine/mixed animal. The practice opportunity will meet the need recognized by students, CVM faculty and private practice colleagues alike to increase “hands on” experience in a private practice setting. Private practice experiences are available for year 1 –
3 students through the selective offerings. Presently, senior students have the opportunity to experience private practice by arranging an externship as an elective. However, initiating an elective course will ensure consistency between experiences, with clear expectations to achieve an approved level of learning/skills objectives with verification from the practice. Practitioners will be valuable partners in the education process in the senior year, providing access to individual animal and herd-related clinical diversity that is increasingly difficult to offer in the academic setting. Prerequisites. Must contact and obtain approval from Dr. Malcolm Roberts in the beginning of the process.

**VMC 990 Musculoskeletal Ultrasound in the Horse** – This course will provide an opportunity for veterinary students to develop and use problem solving skills during management of clinical cases incorporating diagnostic ultrasound in a number of different clinical situations. The course will begin with a brief description of the physics of ultrasound and the resultant sound beam to tissue interactions. The majority of the course will center on musculoskeletal diagnostic ultrasound. This elective is offered during the spring of each year when the caseload for performance horses is higher. The equine surgery service clinician provides the majority of the lameness caseload and initially directs the workup of each case. **Prerequisite:**

**VMC 975 Equine General Surgery**

**VMC 980 Oncology** – This is a two-week, two credit elective rotation during the 4th year of CVM professional studies providing experience in the diagnosis and treatment of cancer in animals. Emphasis is on development of comprehensive cancer management strategies including ethical considerations, diagnostic techniques, treatment options, and client communication skills. Students will be assigned cases being seen by the oncology service as inpatients, outpatients, and new referral appointments.

**VMP 982 Poultry Health Management I** – Poultry Health Management I is a clinical rotation elective for 4th year veterinary students with an interest in poultry health management or food animal production. This two-week course is offered 4 times each year. Diseases of turkeys and chickens will be discussed. Basic concepts in poultry disease diagnosis, prevention and treatment will be emphasized. The course will consist of lectures, laboratory and field experiences.

**VMP 983 Poultry Health Management II** – Poultry Health Management II is a clinical rotation elective for 4th year veterinary students with a commitment to pursue a career in poultry health management or food animal production. This two-week course is offered throughout the year and may be repeated with permission of the instructor. The course will consist of laboratory and/or field experiences designed to meet the student’s career goals. A list of available externships in poultry health management, which may be applicable for this course can be found on the Association of Avian Pathologists web site: [http://www(aaap.info/index.html](http://www.aaap.info/index.html), under Educational Opportunities, Senior Veterinary Student Externships approved by the Kenneth Eskelund Preceptorship Committee. Funds to help pay for travel expenses may be available through the Kenneth Eskelund Preceptorship, see information at the web site listed above. **Instructor Permission Required.**

**VMB 976 – Radiology** – This rotation will provide practical training in the production of quality radiographic examinations and will help develop interpretation skills in diagnostic radiology. Students are expected to be familiar with material covered in the junior radiology course (VMB 960) as it will be incorporated into this rotation. Review of the auto-tutorial teaching cases, located in the “Star Wars” room. The radiology rotation is oriented toward teaching and service. Learning experiences result from a combination of direct contact with the faculty, residents, technicians, and classmates. You will make diagnostic quality radiographs, participate in morning rounds and review didactic material, VMB 960 teaching files and ask questions. **Every senior must take this core course.**

**VMC 997 - Raptor Medicine and Rehabilitation** - This elective senior year rotation allows students to obtain clinical experience in raptor medicine and rehabilitation at Carolina Raptor Center in Charlotte, N. C. Students will develop skills with species identification, capture and handling, physical examination, bandaging, diagnostic sample collection and interpretation, emergency stabilization and treatment techniques, necropsy, anesthesia and surgery assistance, and captive management and husbandry issues. A maximum of two students will be permitted in each two-week clinical rotation. **Instructor Permission Required**
VMP 970 Ruminant Health Management I – This is a two-week block considering health management of ruminant species. During the two-week period, students accompany faculty on visits to farms to deliver health management programs, to investigate health problems, or to consider approaches to enhance productivity. A portion of the course also involves experience in providing individual animal health management and addressing medical/surgical disorders. Restricted to fourth year veterinary students.

VMP 972 Ruminant Health Management II - This course is intended to allow students with a strong interest in ruminant health management to obtain advanced training. Specialty courses in beef, dairy, small ruminant, pharmacology and embryo transfer will be offered. Prerequisite: VMP 970 or Instructor Permission

VMC 950 – Sea Turtle Medicine & Rehabilitation – This course provides practical experience in husbandry and disease diagnosis and treatment in rehabilitating sea turtles at the Karen Beasley Sea Turtle Rescue and Rehabilitation Center (KBSRRC) in Topsail Beach, N. C. Skills to be acquired in clinical and didactic settings include sea turtle husbandry and rehabilitation techniques, diagnostic sample collection and interpretation, physical examination and safe handling, medication delivery, wound treatment, and necropsy protocols.

VMC 956 – Shelter Medicine – This rotation is geared towards students interested in learning about managing health and welfare of small animal populations, including animal shelters, catteries or kennels. The students will have hands on experience evaluating animals as individuals as well as part of a population in regards to health, disease prevention and management, and animal well being. Animal neglect/cruelty will be explored as well as animal behavior as it relates to shelter issues, euthanasia, facility design and animal overpopulation issues.

VMC 960 – Small Animal Emergency Service – This is a two-week elective in the small animal hospital, available throughout the entire year. This service will give senior students the opportunity to assess and treat after-hours emergencies in cats and dogs and possibly some avian and exotic species. When applicable, the students will also be involved in any communications with clients and referring veterinarians.

VMC 988 Special Species – This senior year two-week clinical course (half CVM-based, half private practice) provides practical experience in the diagnosis, treatment and prevention of disease in privately owned fish, amphibians, reptiles, birds, rodents, lagomorphs, and other small mammals. This rotation is designed to combine clinical training in avian and herptile medicine at the CVM with clinically based special species medicine and surgery in private practice. Students will normally spend the first week at the CVM (3 days avian; 2 days herptile). During the second week students will split and visit different practices in the Triangle area. Case responsibility will be assigned to individual students by the course instructor(s) as appropriate in the practice setting. In some cases students will also be seeing pet domestic mammals, depending on the clinic and case load for the particular day. Irregular and/or long hours are not expected but may be required in unforeseen circumstances. Weekend duties are not routinely required. Students will be expected to be neatly dressed, well groomed, and conduct themselves in a professional manner at all times.

VMP 973 Special Topics in Epidemiology – The main goal of this course is to provide senior veterinary students with the opportunity for pursuing a focused research topic in the area of veterinary epidemiology and population medicine under the direction of consenting faculty. The exact direction and scope of the topic is agreed upon between the instructor, the student and the course coordinator. The course is offered only by the permission of the participating instructor(s) and the course coordinator. The instructor and the student will work out the type of project, what exact objectives are to be met and how the success of obtaining those objectives will be evaluated. The objectives and methods of evaluation of performance will be negotiated between the veterinary student and the instructor and put into writing in the form of a Plan of Action PRIOR to course permission being granted by the course coordinator. The Plan of Action must be signed by both the instructor and the course coordinator at least 8 weeks prior t the beginning of the rotation. No one textbook is required for this course. Instructor Permission Required

VMP 987 Special Topics/Ruminant – This two-week elective allows goal-directed educational enrichment in Ruminant
Practice under the direction of consenting faculty. Formats include clinical experiences, clinical and applied investigations, etc. Topics and times are arranged by the student and consenting faculty. Available to 3rd and 4th year veterinary students only upon consent of faculty. **Prerequisite: VMP 970 or VMP 972 or Instructor Permission**

**VMC 939 - General Limited Small Animal Practice** - Will expose clinical year veterinary students to a general small animal veterinary practice. There will be several areas of focus: learning clinical skills relevant to a general veterinary practitioner; developing strong problem solving abilities; developing the strong communications skills necessary to interact effectively with clients, colleagues and staff, incorporating and conducting behavioral evaluations of pets during wellness examinations. Enrollment in this course is limited to students in the DVM program.

**VMC 940 Theriogenology I** – This course is designed to instruct students in clinical theriogenology. It will be primarily oriented toward equine and canine species, however, cases and problems from other species will be seen and included as teaching materials. The students will improve upon the skills learned in VMF 951 and will be expected to use these skills in dealing with clinical cases and laboratory type situations. Transabdominal, vaginal, and rectal examination of the reproductive tract, semen collection, and evaluation will be taught during this course. This course may be repeated as many times as a student wishes during their senior year.

**VMC 941 Special Topics/Theriogenology Advanced** – The primary objective of this course is to provide additional information and training to veterinary students that had taken the VMF 980 Clinical Theriogenology senior clinical rotation. Specifically, emphasis is directed to acquaint students with modern and current practices of clinical theriogenology. Various aspects of assisted reproductive technology available to domestic animals will be discussed. It is expected that the majority of the information and activities offered in this course will involve equine species (80%) and, to a lesser extent, canine (10%) and bovine species (10%). Teaching and client-owned animals are available for the rotation. Although emphasis is given on hands-on activities, didactic instruction of selected topics in clinical Theriogenology will be discussed. **Instructor Permission Required**

**VMP 984 Swine Medicine & Production I** – This course will provide senior veterinary students with techniques and expertise to approach a clinical swine problem. Students will evaluate clinical signs, analyze production records, assess facilities and management, institute a diagnostic plan and establish an economically feasible solution to the clinical problem. The outline for this course may vary slightly from year to year but the following topics will be covered: Necropsy procedures/sample techniques
Interpreting serologic/virologic results
Farm visits – review building/equipment designs
Practical swine reproductive management
Practical bacteriology
Practical swine nutrition/rations
Swine record systems/PigChamp

**VMP 985 Swine Medicine & Production II** – This course will provide senior veterinary students with the opportunity to utilize the techniques and expertise gained in VMF 984. Students will evaluate clinical and production problems on a variety of swine farms. Practicum/field work and independent study will be conducted on commercial swine farms, usually with a veterinary practitioner or faculty member. **Instructor Permission Required**

**VMB 976A – Ultrasound** – The objective of the block is to provide fundamental practical training in small animal abdominal sonography. The rotation is oriented towards teaching primarily through the clinic caseload with as much "hands on" opportunity as is practical. There will be minimal didactic teaching material, some required reading and a brief case report to complete. At the completion of the rotation, students are expected to know the basic physics of diagnostic ultrasound, be able to explain common artifacts and to be able to recognize and obtain diagnostic images of the major abdominal organs.
**VMC 984 Veterinary Clinical Neurology** – This service provides diagnosis and management of nervous system disorders in animals, including nuclear imaging, myelography, CT scans, electromyography, neurosurgery, and postoperative patient rehabilitation including hydrotherapy and treadmill training. Attendance is required at weekly clinical rounds, general medicine rounds, and the patient rounds and mini-seminars conducted within the service. Irregular and/or long hours may be required. Students will be expected to be neatly dressed, well groomed, and conduct themselves in a professional manner at all times.

**VMP 999 Veterinary International Field Studies** – This course will provide students with practical experience in a foreign country working on a veterinary medicine related project being conducted in that country. Projects may focus on production medicine, occupational safety, zoological medicine, or basic research. Contact Dr. Michael Levy if interested in this experience.

**VMC 998 Wildlife Rehabilitation Medicine** – Wildlife rehabilitation medicine, the delivery of health care and management to free-ranging native wildlife with the goal of re-release is an important component of clinical veterinary medicine. Students will apply practical medical and surgical techniques and methods for diagnosing disease, delivering health care, and implementing appropriate triage for injured and ill North Carolina native wildlife. Must have approval of course coordinator. Prerequisite

**VMC 964 - Zoological Husbandry and Nutrition** - This course is designed to provide senior veterinary students with husbandry and nutrition of zoo animals while learning the importance of prevention of disease in captive wildlife. Students participate in formal rounds, autodidactic exercises, and hands on animal care delivery. Successful completion of three Zoological Medicine Selectives or course coordinator's permission. Prerequisites

**VMC 989 Zoological Medicine** - This course is designed to introduce the senior veterinary students to clinical zoological medicine. Students will gain practical experience in the diagnosis, treatment, and prevention of disease in captive, zoological specimens maintained in zoos. Students participate in formal rounds, autodidactic exercises, and case management at the N. C. Zoological Park. Must have approval of course instructor. Prerequisites Instructor Permission Required