

**MEMORANDUM**

**To:** Board of Regents  
**From:** Board Office  
**Subject:** Proposal for a M.S. Program in Veterinary Diagnostic and Production Animal Medicine, ISU  
**Date:** May 6, 2002

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**Recommended Action:**

Approve Iowa State University's proposal for a M.S. program in Veterinary Diagnostic and Production Animal Medicine.

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**Executive Summary:**

Iowa State University is requesting approval of a new M.S. program in Veterinary Diagnostic and Production Animal Medicine within the College of Veterinary Medicine. Production animal medicine is a top priority of the teaching, professional practice and research strategies of the College of Veterinary Medicine.

**Rationale**

Changes in veterinary medicine supporting animal agriculture have increased the need for post-graduate programs in diagnostic and production animal medicine (livestock production). The proposed major provides for education and experience beyond the DVM degree with an emphasis on preventive and population approaches for enhancing animal well-being and productivity. This program, if approved, will give graduate veterinarians the advanced medical/disease expertise and research training and experience that they need to better serve the food animal industry in the state and beyond.

**Interinstitutional and Board Office Review**

The Interinstitutional Committee on Educational Coordination (ICEC) and the Board Office have reviewed this request and are recommending approval.

**Not Duplicative**

Though there are a handful of similar graduate programs nationally, this program would be unique in the State of Iowa. Iowa State University is able to offer a very integrated, campus-based, comprehensive, training experience due to the close integration of teaching and research with the Veterinary Diagnostic Laboratory on its campus. Iowa State University is the leader among universities in the United States with veterinarians entering production animal medicine.

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**Strategic Plan:**

This effort is part of the institutional activities which help the Board of Regents achieve its objective to improve access to the Regent institutions as stated in its Strategic Plan:

KRA 2.0.0.0            Provide access to educational, research, and service opportunities within the missions of the Regent institutions.

Objective 2.2.2.0      Evaluate annually and, where appropriate, make recommendations to meet relevant educational and service needs of the state.

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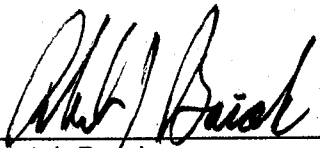
**Analysis:**

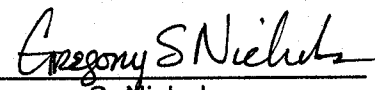
Costs                      The costs for the proposed program are estimated to be \$189,000 for the first three years and will be funded by grants and reallocations.

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Regent Program Review Questions      Attached is a copy of the University's responses to the Regent New Program Review Questions (pages 3-10).

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Robert J. Barak

Approved:   
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Gregory S. Nichols

Regents Program Review Questions—Majors

Master of Science Degree, Major in  
Veterinary Diagnostic and Production Animal Medicine

1. Need

A. How will this proposed program further the educational and curriculum needs of the students in this discipline?

Students desiring to excel in the practice of production animal medicine need to understand statistical procedures used in characterizing the epidemiology of disease and production problems in large populations of food and fiber animals, as well as how to design and interpret the results of clinical trials. The professional veterinary curriculum is nearly devoid of any statistical education. Merely providing veterinary students with classes in statistics is not sufficient to prepare them for advanced practice in production animal medicine. In order to address the challenges of food animal production as practiced today, statistical knowledge must be combined with an advanced application of diagnostics and therapeutics applied in production animal settings, as well as an understanding of the nutritional aspects of production. Graduates from veterinary medicine have an excellent broad-based background in general medicine. Those who enter the specialized area of production animal medicine need to enhance and focus their experience to deal with disease management and prevention, advanced diagnostic techniques, quantitative evaluation of data, critical analysis of research trials, understanding of confinement and/or grazing systems of animals production, advanced nutritional concepts and an understanding of production animal disease management in the context of the economics of contemporary animal production. In addition, today's food animal veterinarian must be equipped to lead the industry in issues involving the balance of pharmaceutical use in production animals with possible adverse impacts of this use on human therapeutics (e.g., antimicrobial resistance in potential zoonotic pathogens).

B. How does it further the educational and curriculum needs of other units in the college or university?

A faculty geared to addressing issues of applying population evaluation principles would be useful in all areas of the college. Very few disease problems are "isolated", but often are part of a larger population with a range of disease problems and responses that may signal a population trend and/or suggest means for control if properly understood. In addition, allied specialties such as animal science, agricultural engineering, economics and genetics are heavily oriented to quantitative and statistical evaluation of research studies and production technologies. A comparable understanding in graduate veterinary curricula will allow better interaction of these specialties to the betterment of the educational process and the continuation of highly collaborative research among the departments and colleges.

Both graduate faculty and graduate students in VDPAM, by their enhanced expertise and active research and professional practice, will serve as role models for students in the professional curriculum and will stimulate them to increasingly strive for excellence. The field-based research of graduate students will also provide enhanced teaching opportunities for the professional curriculum. A portion of the professional curriculum students will be encouraged to continue graduate level training as a consequence of observing and participating in graduate level activities of the department.

2. **Duplication and Collaboration**

A. **What programs in this field of study are available in other colleges and universities in Iowa?**

This program would be unique in the state of Iowa. There is only one College of Veterinary Medicine, and currently no graduate program in Diagnostic and Production Animal Medicine. A related graduate major would be Animal Science in the College of Agriculture.

B. **With what representatives of these programs have you consulted in developing this proposal? Provide a summary of the reactions of each institution consulted.**

This application was submitted to the Department of Animal Science for review and comment. Animal Science is the only department determined to have some overlapping interests, but has no comparable requirements nor degree program stressing disease recognition and prevention coupled with production agriculture management techniques to limit disease and maximize health.

Response was obtained through Dr. Joseph Sebranek, Director of Graduate Education for Animal Science. Dr. Sebranek's summary letter is attached. Briefly, the comments were that the proposed MS degree program is a good concept and there is need for expertise like this in animal agriculture. The faculty in Animal Science is highly supportive of the proposal. The Department suggested that because of importance of nutrition in disease and disease susceptibility, it would be logical to include animal nutrition in the program. Specific suggestions were Animal Science 518 (Non Ruminant Nutrition), Animal Science 519 (Ruminant Nutrition), Microbiology 507 (Microbial Safety of Food) or Animal Science 570 (Advanced Meat Science). Of these, Microbiology 507 has been previously listed as a course available to support the proposed major. The other courses have been added to the list of supporting courses described in section 8. (c) above.

- C. In what ways is this proposed program similar to those mentioned in A? In what ways is it different or does it have a different emphasis?

A related graduate major would be Animal Science in the College of Agriculture. However, animal science is oriented to production of animals and the research or evaluation that accompanies this activity. Disease diagnosis and control is not a focused part of animal science studies. Diagnostic and Production Animal Medicine would be a complementary but distinct program that concentrates on the management and preventive aspects of populations of animals. The objective is to provide early detection of disease and/or the prevention of recognizable or subclinical disease that damages animal health or interferes with efficient and economic production.

- D. How does the proposed program supplement the current programs available?

An active VDPAM research and graduate training program will provide courses and opportunities for projects with other university departments such as Agricultural Engineering, Agronomy, Economics, Entomology and Genetics. These graduate specialties can interact at a research or advanced teaching level with many of the problems or issues of production animal agriculture, but none offer comparable graduate training or degrees. VDPAM already actively collaborates with teaching and research programs in Animal Science and Agricultural Engineering. The beef production units of the College of Veterinary Medicine and the Department of Animal Science are working together in educational and outreach capacities. Dr. Leo Timms works closely with Veterinary Medicine in teaching and outreach efforts for mastitis control in Iowa dairy herds. Drs. Dan Loy, Daryl Strohbehn, John Lawrence, Steve Barnhart, Gene Rouse, and Doyle Wilson currently work together with VDPAM in teaching advanced beef production medicine courses to senior students, serving on graduate committees, and providing support services to beef producers in Iowa. The Iowa Pork Industry Center also provides extensive opportunities for graduate students to access current issues and problems of modern swine production agriculture. Agricultural Engineering and Veterinary Medicine consult with one another on issues of building ventilation and toxic gases. Continuing these relationships will strengthen the experiences of the MS degree in VDPAM.

The proposed program is different from the existing Production Animal Medicine area of specialization currently in the Department of Veterinary Clinical Sciences (VCS). The area of specialization in VCS is a general option from another department and was granted as an interim program while the new VDPAM departmental graduate program is being developed and approved. Many graduate faculty and graduate students in the new department were formerly in VCS; Graduate students and their programs of study are already underway. The area of specialization in VCS allows for recognition of the specialty for which the new department was formed, and would provide a means for current students to proceed with their graduate education while a more focused program is developed in VDPAM.

E. **Has the possibility of some kind of interinstitutional program or other cooperative effort been explored? What are the results of this study?**

The VDPAM Department currently has three specific cooperative efforts with other Midwestern universities.

- a. Professional students take special training in dairy medicine at University of Wisconsin College of Veterinary Medicine. This same access is available to graduate students with interest in dairy production medicine. In turn, Wisconsin students attend advanced courses in beef and swine production medicine at ISU.
- b. Professional and graduate students have the opportunity to study at the USDA Meat Animal Research Center (MARC) at Clay Center, Nebraska. This large beef research facility provides experience in reproductive and nutritional aspects of beef production that will enhance the production animal experience of VDPAM graduate students and allow them to observe state of the art research methodology in another setting.
- c. Dr. Brad J. Thacker has a current collaborative relationship with the University of Illinois that allows Iowa State University students to participate in an advanced training program in swine medicine. This program allows for expanded knowledge in several areas of swine medicine and permits students to broaden their base of contact with another graduate faculty in a way that is compatible with and supportive of the VDPAM graduate major in Production Animal Medicine.
- d. Kirkwood Community College, Cedar Rapids, IA has both a veterinary technician and swine management program, which currently interacts with faculty in the proposed major and provide additional experiences to graduate students. Specific activities include consultation, teaching of their students and those at Iowa State, and providing producer education through workshops and other approaches. Thus, VDPAM already has a reciprocal relationship with the Kirkwood program to aid in our respective teaching and training missions.
- e. Specific large production units are located in Iowa and surrounding states. Examples would be Swine Graphics (Webster City, IA) and Iowa Select Farms (Iowa Falls, IA) which have combined management and veterinary programs as part of their production operations. The Veterinary Diagnostic Laboratory of VDPAM currently services these units and many others in Iowa and surrounding states. In addition, VDPAM faculty in Production Animal Medicine and Extension have specific and ongoing relationships with these units which would serve as conduits for relevant and extensive learning experiences for graduate students.
- f. VDPAM currently has a cooperative project with the University of Iowa studying microbial resistance. This relationship should foster practical experience in antimicrobial resistance as well as opportunities for graduate student research supportive of the thesis requirement for the major.

F. **Please list the Iowa institutions in which articulation agreements are being developed for the proposed program.**

None

G. Provide the CIP code for the proposed program: 51.2501

3 Please estimate the enrollment in this program for the next five years as follows:

A. Undergraduate: Not Applicable. This is a Graduate Program.

Majors	_____	_____	_____	_____	_____
Non-Majors	_____	_____	_____	_____	_____

B. Graduate

Majors	<u>8</u>	<u>8</u>	<u>10</u>	<u>10</u>	<u>12</u>
	4	4	6	6	8
Non-Majors	_____	_____	_____	_____	_____

C. On what basis were these estimates made?

Current funded graduate student strength in the VDPAM department is eight students. With acquisition of increased funding for research projected in years three through five, from two to four additional students would be expected through support from major research grants. A faculty position currently approved in Biostatistics would also be supportive of additional graduate students. Non-majors are expected to come from related departments in the University, especially Animal Science, where increased understanding of production animal diseases would enhance their respective roles in animal production.

D. What are the anticipated sources of these students?

Several major sources of students constitute the current graduate student pool interested in Production Animal Medicine.

- Veterinarians in practice often choose to return to graduate school for additional specialized training at the Master of Science level.
- Recent graduates in veterinary medicine who recognize the need for advanced training in order to qualify for high level positions in animal production units or for technical service positions in agribusiness.
- Veterinarians from the food and animal production industry who wish to increase their expertise and then return to their animal production responsibilities.
- Veterinarians in the animal health industry who wish to increase their knowledge base and research expertise in order to return to their companies.
- International students who wish to obtain an advanced degree in Production Animal Medicine and to increase their experience in clinical or diagnostic aspects of production animal medicine.

As the animal production industry and the pharmaceutical and biological companies that supply them continue to increase in size and complexity, we anticipate continued demand for veterinarians with advanced training in the scientific and management aspects of disease control.

4. **Please provide any available data or information on employment opportunities available to graduates of this program in Iowa and nationally.**

Recent graduates with production animal medicine training from Iowa State University or from related programs elsewhere have readily taken positions in livestock production, extension, diagnostic medicine and the pharmaceutical and biologics industries.

Examples of Iowa State University Graduates include the following:

- Dr. Paul Sundberg, DVM, MS: currently with National Pork Producers Council, Clive, IA.
- Dr. Mel Pence, DVM, MS: currently with University of Georgia Extension specializing in beef cattle production medicine.
- Dr. Bob Neutsch, DVM, MS: currently with Pfizer Animal Health
- Dr. Steven Sornsen, DVM, MS: currently with Seaboard Farms, Inc. as Vice President for Health Services.
- Dr. Tyler Holck, DVM, MS: Novartis Animal Health, Director of Food Animal Production
- Dr. Michael Senn, DVM, MS: Pharmacia & Upjohn, Technical Services Veterinarian
- Dr. Tami Boettcher, DVM, MS: Research scientist and graduate student in bovine disease research, National Animal Disease Center.

Examples of persons trained in related areas of production animal medicine at other institutions:

- Dr. Larry Ritter, DVM, MS: currently manager of Genetic Improvement and Meat Quality for Farmland Foods, Kansas City, MO.
- Dr. Beth Lautner, DVM, MS: currently with National Pork Producers Council, Clive, IA.

5. **Are there accreditation standards for this program?**

There are no required certification or accreditation standards for this program, which is an academic degree. However,

A. **What is the accreditation organization?**

The parent organization for Board Certification in Veterinary Medicine is the American Veterinary Medical Association.

B. **What accreditation timetable is anticipated?**

Two to three years of supervised preparation under a Board certified mentor is acceptable for qualification to sit for Board examination.



6. Does the proposed program meet minimal national standards for the program, e.g., Council of Graduate Schools or other such bodies?

There are none, but the proposed program meets all Council of Graduate Schools and ISU graduate standards.

7. Please report any reactions of the Iowa Coordinating Council for Post-High School Education. List date that the program information was submitted to the Council. No concerns were expressed by the ICCPHSE. (Submitted 2/19/02)

### Additional Resource Needs

1. Will the program require new resources? Yes X No       
If yes, what is the plan to obtain new resources?

We do not anticipate the need for any new state appropriated resources. It is expected that major professors will secure an appropriate level of external funding in order to support their graduate students.

2. Will the program require reallocated resources? Yes X No       
If yes, what is the university's reallocation plan to fund this program?

There is the need for office space for new graduate students. This need will most likely be met by the internal reassignment of space.

With the expectation that major professors will provide funding for their prospective graduate students, having adequate space becomes the most pressing need. A space reallocation plan will have to be generated at the College level. The need for a College space reallocation plan has been discussed but not yet implemented.

3. At what level of enrollment will additional resources be required for the program? Eight (8) students. (See above as to external funding sought for graduate student support.)

4. Estimate the total costs (or incremental increases in expenditures) that may be necessary as a result of the new program for the next three years.

The department will need to continue to invest in adequate research facilities to support graduate student research. In addition, heavy reliance on computers and enhanced information management will require continued expansion and upgrading of computer capabilities. The proposed major will emphasize quantitative evaluation of production and disease data, so state of the art computational methods and equipment will be needed.

5. For programs planning to use external grants, what would be the effect of the grant termination?

Grant termination could result in diminished support for graduate students. Students enrolled in the program at the time of possible grant termination would certainly finish the program with support from departmental resources.

	First Year	Second Year	Third Year
A. Faculty	Biostatistician. Position is approved by College	None	None
B. Graduate Assistants	None	None	None
C. General Expense	\$10,000 Clerical and support staff	\$10,000 Clerical and support staff	\$10,000 Clerical and support staff
D. Equipment	None	None	None
E. Library Resources	None	None	None
F. New Space Needs (est. amt. & cost of new space and/or remodeled space)	400 square feet recently renovated for graduate student research	None	None
G. Computer Use	\$4,000 for continuing computer upgrades	\$3,000 for continuing computer upgrades	\$3,000 for continuing computer upgrades
H. Other Resources (please explain)	\$2,000 for graduate student travel and supplemental experience	None	\$1,000 for graduate student travel and supplemental experience
<b>Total</b>	\$152,000	\$18,000	\$19,000