

UNIVERSITY OF KENTUCKY



University Senate Council
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17 April 2002

TO: Members, University Senate

FROM: University Senate Council

RE: Course/Program Actions: Effective Date: Summer Semester, 2002,
UNLESS OTHERWISE NOTED.

The Senate Council circulates for your approval the following curricular actions. Objections will be accepted from University Senators and faculty members and must be received within ten days of receipt of this notice. All other requirements for the courses or programs as approved below must be met.

SENATE COUNCIL

COLLEGE OF ALLIED HEALTH PROFESSIONS

Proposed Revision: Master of Science Degree in the Clinical Science Program

Background:

The College of Allied Health Professions Academic Affairs Committee, the Graduate Council and the Senate Council recommend approval of the following revision of the Reproductive Laboratory Science (RLS) track of the Master of Science in Clinical Sciences program.

The RLS MS Degree Program

The Reproductive Laboratory Science (RLS) track of the Master of Science in Clinical Sciences was approved in Spring, 2001 as a traditional education program with coursework completed on campus in Lexington, KY in typical 16-week semesters. The RLS track was included in the MSc degree program because of the documented need for formal education in reproductive laboratory science. In addition, the CLS Division had both the faculty expertise and experience from the RLS post-baccalaureate certificate courses to develop and offer graduate education in the nascent discipline. The track was established to provide graduates in the field of reproductive laboratory science to meet the national need for trained embryologists for the nearly 400 assisted reproductive technology (ART) laboratories in the United States. Unfortunately, the track, as approved and presently

offered, is not responding to this need. The core courses do not adequately prepare students for the RLS track. Also, the majority of individuals interested in completing this education are already employed in ART laboratories and therefore require a more accessible program for obtaining an M.S. degree. Although the Division has the only university-approved program in the United States, students are opting for programs in Europe, in spite of increased costs associated with foreign travel. European programs are based on either distance and/or modular formats and the entire curricula are designed for the RLS discipline.

The program was developed as part of a joint degree program with the University of Louisville and was designed to serve four different tracks 1) hematology & transplantation medicine; 2) pathology assistant; 3) clinical laboratory management; and 4) reproductive laboratory science. Tracks in hematology & transplantation science and reproductive laboratory science were to be offered solely at the University of Kentucky. A core was developed to loosely link these four tracks and included courses for tracks at UofL. In early 2001, the University of Louisville pulled out of the program and the proposal was edited to remove all references to UofL. However, the issues with the core and other curricular needs were not addressed at that time. This proposal is designed to remove duplication and to offer a curriculum to better meet the needs of graduates in the RLS track.

Revisions:

1. Statistics requirement: The current curriculum satisfied the statistics requirement through completion of CSC 605. The new proposal calls for a broadening of the statistics requirement to allow for other courses including STA 570 to be used to satisfy this requirement.
2. Physiology requirement: The current curriculum satisfied the physiology requirement through completion of CSC 600. The new proposal calls for a broadening of the physiology requirement to allow for other courses including NUR 653, PHR 952 and others to be used to satisfy this requirement.
3. Policy & Ethics: The current curriculum requires two courses, CSC 601 Health Care Policy & Ethics and CSC 603 Quality Assurance and Laboratory Regulations. The new proposals requests that these two courses be dropped and CSC 625 Policy, Management, Ethical and Legal Issues in Assisted Reproduction be used to satisfy this requirement since it includes content essential for RLS students.
4. Related Science: The new proposal calls for a minimum of 3 to 6 graduate credit hours in a related science (from areas of genetics, endocrinology, cell and molecular biology, etc) based on student need.
5. Research: The new proposal calls for research methods to be covered in a course geared for RLS students CSC 630 RLS Research, rather than the course in the current curriculum, CSC 604 Research Methods for the Clinical Sciences.

These changes will provide for a more appropriate curriculum that better meets the needs of students and the work settings that will employ these graduates.

CURRICULUM CHANGES FOR RLS TRACK IN MSc IN CLINICAL SCIENCES

Note: All current courses to remain on the books; only the RLS track will be revised; the hematology/transplantation medicine will remain as is.

Background

The Reproductive Laboratory Science (RLS) track of the Master of Science in Clinical Sciences was approved in Spring, 2001 as a traditional education program with coursework completed on campus in Lexington, KY in a typical 16-week semester. The RLS track was included in the MSc degree program because of the documented need for formal education in reproductive laboratory science. In addition, the CLS Division had both the faculty expertise and experience from the RLS post-baccalaureate certificate courses to develop and offer graduate education in the nascent discipline. The track was established to provide graduates in the field of reproductive laboratory science to meet the national need for trained embryologists for the nearly 400 assisted reproductive technology (ART) laboratories in the United States. Unfortunately, the track, as approved and presently offered, is not responding to this need. The core courses do not adequately prepare students for the RLS track. Also, the majority of individuals interested in completing this education are already employed in ART laboratories and therefore require a more accessible program for obtaining an M.S. degree. *Although we have the only university-approved program in the United States, students are opting for programs in Europe, in spite of increased costs associated with foreign travel. European programs are based on either distance and/or modular formats and the entire curricula are designed for the RLS discipline.*

Background for Present Core

The MSc in Clinical Sciences was developed as a joint effort between two universities, the Department of Clinical Laboratory Science at the University of Louisville and the Division of Clinical Laboratory Sciences at the University of Kentucky. The core of this program was designed to provide general courses for four different tracks: (1) hematology and transplantation medicine; (2) pathology assistant; (3) clinical laboratory management; and (4) reproductive laboratory science. In order to avoid competing with established education programs in management at the University of Kentucky, it was agreed that the clinical laboratory management track would only be offered by the University of Louisville. It was further agreed that because the expertise for reproductive laboratory science was at the University of Kentucky, the RLS track would only be offered by U.K. The core, the hematology/transplantation track and the pathology assistant track would be offered jointly by the two universities. The core focused on courses in pathology and laboratory medicine, since all tracks except RLS were part of that general discipline. Several of the core courses were developed specifically to prepare students for the clinical laboratory management track since it had been previously documented that a significant number of laboratory professionals were interested in that particular curriculum.

Between the time the University of Louisville and the University of Kentucky initiated the proposal for a joint MSc in Clinical Sciences (1997) and the approval of the program by the University of Kentucky, (2001) several significant changes occurred. In 1998 the track in pathology assistant was dropped from the proposal due to lack of support from the

Department of Pathology and Laboratory Medicine. The College of Allied Health at the University of Louisville was closed in 2000, forcing their Department of Clinical Laboratory Sciences to withdraw from the Clinical Sciences graduate proposal. Following these changes, and in the interest of time, the Division of Clinical Laboratory Sciences removed all references to the University of Louisville from the proposal and submitted the document to the University of Kentucky for approval. In Spring, 2001, the MSc in Clinical Sciences was approved by the University of Kentucky for the two remaining tracks, hematology/transplantation medicine and reproductive laboratory science.

The MSc in Clinical Sciences is now being offered for these two tracks. Core courses, which were initially proposed primarily for the management and pathology assistant tracks, still remain although the tracks do not exist. For example, Human Pathophysiology (CSC 600) is required without an option for a more general physiology course. Epidemiology and Biostatistics (CSC 605) was included instead of a more generic graduate statistics course, to support the pathology assistant track. This specific requirement was included for the pathology assistant track and was not removed when it was determined that the track could not be offered. Several courses, important to the management track remained part of the core. Both Health Care Policy & Ethics (CSC 601), and Quality Assurance and Laboratory Regulations (CSC 603), while beneficial for students in any track, emphasize clinical laboratory management.

Core courses are specific and were originally intended to remain within the CLS division or department and be taught by CLS faculty. The core was designed based on faculty expertise and availability from the Department of CLS at the University of Louisville, and the Department of Pathology & Laboratory Medicine and the Division of CLS at the University of Kentucky. This situation has changed dramatically. Faculty are no longer available to contribute to the program from either the University of Louisville or the Department of Pathology and Laboratory Medicine, leaving both the RLS and hematology/transplantation medicine specialty tracks and the core to be taught by CLS faculty at the University of Kentucky.

In the end 19 hours of core courses were designed, at least in part, for tracks which are not being offered, and many of these courses do not support the RLS track. In fact materials included in the course developed specifically for the reproductive laboratory science track, CSC 625, Policy, Management, Legal and Ethical Issues in Assisted Reproduction, also are included in the core courses CSC 601, Health Care Policy and Ethics, and CSC 603, Quality Assurance and Laboratory Regulations. This duplication was recently questioned by the University Senate committee charged with reviewing the proposal for the RLS Graduate Certificate.

Core Changes

The core now needs to be revised for the RLS track to better prepare the student for the specialty. While CSC 601 and CSC 603 should not be required for the RLS track, there is a need for more science-based courses to prepare students for the specialty. This need was documented when the Graduate Certificate was taught in Summer, 2001. Two of the four students in the RLS Graduate Certificate were CLS seniors or graduates and the remaining

two students held graduate degrees in science. The CLS students lacked appropriate backgrounds in genetics, cell and molecular biology, and endocrinology. This deficiency made it difficult for the students with CLS backgrounds to compete with students with a more traditional background in science.

For the RLS track, the core should be revised to include the following:

- 3-4 credit hours in graduate statistics could be satisfied with CSC 605, Epidemiology and Biostatistics (current core course) or courses cross-listed, including STA 570, Basic Statistical Analysis
- 3-4 credit hours in graduate physiology could be satisfied with CSC 600, Human Pathophysiology (current core course), or NUR 653, Pathophysiology or PHR 952 (current cross-list) and PHR 953, Diseases Processes I and II or PAS 853, or others (TBD)
- Drop the requirement for CSC 601* (Health Care Policy & Ethics) and CSC 603* (Quality Assurance and Laboratory Regulations) since the content important for RLS students is included in CSC 625, Policy, Management, Ethical and Legal Issues in Assisted Reproduction.
- Add the requirement for a minimum of 3-6 graduate credit hours in related science (from areas of genetics, endocrinology, cell and molecular biology etc), based on student need, as determined by the RLS Admissions Committee
- Include key content from CSC 604, Research Methods for the Clinical Sciences as part of CSC 630, RLS Research for M.Sc.
- CSC 602, Clinical Sciences Seminar, taken once since this is a MSc degree

With these revisions students in both the hematology/transplantation medicine track and the RLS track of the MSc program in Clinical Sciences will share core courses in physiology and statistics. Although students in both tracks would complete courses in seminar and in research methods, distribution and specificity of the content for these courses will be redistributed. The seminar course would be made specific for RLS (CSC 628) and selected content from the Research Methods for the Clinical Sciences (CSC 604) will focus on the RLS discipline and will be included in RLS Research (CSC 630).

RLS Track Changes

Experience with the RLS Graduate Certificate during Summer, 2001 also revealed the need for a change within the RLS track of the MSc degree program. The two non-CLS students in the RLS Graduate Certificate had not had courses in microbiology. Since many of the causes of reproductive failure are due to microorganisms, and since laboratory contamination and spread of infectious disease are primary concerns in the ART laboratory, a background in reproductive microbiology is essential. Changing CSC 623, Reproductive Immunology to include microbiology (new course CSC 618, Reproductive Immunology & Microbiology) as well would satisfy this requirement.

Since RLS track students would not complete CSC 604, Research Methods for the Clinical Sciences, this content would be incorporated in CSC 630, RLS Research.

Delivery Method Changes

The need for formal education in RLS is well established. There is a documented shortage of trained embryologists in the United States with approximately four positions for every trained professional (Appendix A; ASRM Embryology Training Survey). Problems and costs associated with on-site training also is well documented (Appendix B). Formal education in RLS is supported in general by professionals in the field as evidenced by a formal letter from the leading professional organization, the American Society for Reproductive Medicine (Appendix C; ASRM letter) and the employment record of our certificate program graduates (Appendix D, table). Note: Copies of Appendices available upon request.

Although need is established, and the program is now university-approved and available, accessibility for individuals most interested in pursuing the MSc in RLS remains a concern. The majority of individuals wishing to receive a degree in RLS or embryology are employed in ART laboratories and are unable to leave their positions to pursue a traditional graduate program (see Appendix E; correspondence from prospective students and Appendix F; results of survey regarding distance learning and modular delivery options for the RLS track). Note: Copies of Appendices available upon request.

To respond to the need for distance education, and to make the RLS track more accessible, the following modifications are being proposed:

- Develop 3 one-credit hour lecture courses, which must be completed prior to more advanced RLS courses, for delivery via distance learning
 - CSC 615 Reproductive Laboratory Science
 - CSC 616 Andrology
 - CSC 617 Reproductive Immunology & Microbiology

Note: Laboratories for CSC 615, 616 and 617 will be included in the on-campus course, CSC 618, Laboratories in Andrology, Immunology & Microbiology.
- Offer the advanced, and laboratory intense, campus-based RLS courses in a modular format of 1-3 week sessions. Since modular units will contain large amounts of didactic material and student laboratories will be limited to practice with animal oocytes and embryos, the following compensations will be incorporated:
 - Students will receive reading materials prior to the commencement of campus modular classes.
 - The final exam for CSC 621 and CSC 624 will be given at the end of week 8, following tours of ART labs and, for the Graduate Certificate students, also following the clinical practica, to give students:
 - Time to assimilate the material presented during weeks 2-4
 - The opportunity to correlate didactic material with clinical experience
- Develop flexible options for the RLS research project (e.g. individuals who are already working in an ART laboratory, and have a qualified Ph.D. director, could negotiate with U.K. to complete parts of their research in the home lab).

Please refer to Appendix G (available upon request) for RLS faculty and clinical sites.

Revised Curriculum Meets University Graduate School Requirements

The proposed curriculum revisions for RLS meet university requirements for a master's degree Plan B (non-thesis) (Reference: *University of Kentucky Graduate Bulletin, page 22: Thesis/Non-Thesis Options*). The bulletin states that candidates for the master's degree will have a major area (defined usually as an academic department) and must take at least 2/3 of the course work in this area; the other 1/3 may be taken in this area or in related graduate areas. Students in the RLS track will have their major area in Clinical Sciences. At least 2/3 of the courses will be in this area; less than 1/3 will be taken in a related graduate area in math and science. As required by the Council of Postsecondary Education, students will complete at least one-half of the minimum course requirements (excluding thesis, practicum or internship credit) in the major or core area with three-fourths of these at the 600- to 700-level. Students in the RLS track will complete at least one-half of the minimum course requirements (excluding practicum) in the CSC core area with at least three-fourths of these at the 600- to 700-level.

Summary

In summary, the following changes would make the program more successful and allow the recruitment of larger numbers of students:

- revise core and make specific for RLS track
- revise RLS track to include additional, needed courses (e.g. microbiology)
- modify delivery method to make more RLS track more accessible
 - distance learning for 3 courses
 - modular delivery for campus-based courses
 - flexibility for research projects

Note: Charts outlining the current and proposed curricula are attached.

New Courses:

CSC 615 Reproductive Laboratory Science (RLS) (1)

The course includes basic cell biology and principles of genetics; a review of the male reproductive system including hormonal control, early development, spermatogenesis and fertilization; a review of the female reproductive system including hormonal control, early development, oogenesis, the menstrual cycle, fertilization and early implantation.

CSC 617 Reproductive Microbiology and Immunology (1)

A review of basic immunology will be covered including an overview of the organs, tissues and cells that comprise the immune system, different forms of immunity and the basis of the immune response. The reproductive immunology segment will focus on antibodies associated with infertility and reproductive failure, and also will include properties of the immune system during pregnancy. Microbiology will be covered as it pertains to assisted reproductive technology, focusing on: (1) causes of infertility and reproductive failure; (2) infectious

agents that may be transmitted in the assisted reproductive technology (ART) laboratory and (3) prevention of contamination in the ART facility.

Prereq: CSC 528, CSC 615 or consent of instructor

Implementation: Fall, 2002

CSC 618 Labs in Andrology, Reproductive Microbiology & Immunology (1)

Andrology: Student laboratories will focus on semen analysis, sperm function tests, and preparation of partner and donor semen for artificial insemination. Advanced andrology procedures, including the sperm penetration assay and the hemi-zona assay, will be discussed and protocols provided. **Reproductive Immunology:** Students will perform procedures for detecting antisperm antibodies in semen and in serum. Sperm-cervical mucus testing and cross-testing will be performed using controlled donor semen and bovine cervical mucus. **Reproductive Microbiology:** Organisms associated with sexually transmitted diseases, infertility, and reproductive failure will be demonstrated with representative demonstrations consisting of: stained slide of bacteria, fungi and parasites and electron micrographs of viruses; organisms on appropriate culture media; examples of testing for identification. Students will use data from the demonstrations to develop summaries for the correct isolation and identification of these organisms. Laboratory: 2-3 hours per week. Prereq: CSC 528, CSC 615, CSC 616, and CSC 617 or consent of instructor.

CSC 628 RLS Seminar (1)

Students in the RLS seminar will critique research papers in the field, will develop and present PowerPoint presentations on subjects covering andrology, ART, cryopreservation of human reproductive tissue, management issues in the reproductive laboratory, and policy, ethical and legal issues in ART. May be repeated to a total of two credits.

Prereq: CSC 528, CSC 615, CSC 616, CSC 617, CSC 618, CSC 619, CSC 621, CSC 624, CSC 625 or consent of instructor.

Course Changes:

CSC 620 Andrology (3)

(Change in number, credits, lecture-lab ratio, description and prerequisite)

Change to:

CSC 616 Andrology (1)

The course will include a review of male physiology, spermatogenesis and fertilization. The procedures appropriate for evaluation of male fertility will be presented and conditions and diseases associated with male factor infertility will be discussed. Basic and advanced andrology tests and procedures for both diagnostic and treatment purposes will be reviewed. Micromanipulation procedures (intracytoplasmic injection [ICSI]) and treatments using epididymal and testicular sperm will be introduced.

Prereq: CSC 528, CSC 615 or consent of the instructor.

CSC 621 Embryology/Assisted Reproductive Technology (3)
(Change in title, description, prerequisite and lecture:lab ratio)

Change to:

CSC 621 Embryology & Assisted Reproductive Technology (3)
Lecture: The course will include a review of the female reproductive system, fertilization and implantation. The procedures appropriate for evaluation of female fertility will be presented and conditions and diseases associated with female factor infertility will be discussed. Basic and advanced tests and procedures for the treatment of infertility will be presented with a focus on assisted reproductive technology procedures, including in vitro fertilization and related procedures, micromanipulation, embryo culture, and third party reproduction. **Laboratory:** The laboratory will focus on embryo culture and micromanipulation procedures using mouse oocytes and embryos and human spermatozoa. Students will set up quality control for the ART laboratory. Lecture: 1 hour; laboratory 1 hour per week.
Prereq: CSC 528, CSC 615, CSC 616, CSC 617 and CSC 618 or consent of instructor.

CSC 624 Gamete & Embryo Cryopreservation (1)
(Change in description and prerequisite; add lecture:lab ratio)

Change to:

CSC 624 Gamete & Embryo Cryopreservation (1)
Lecture: Principles of cryopreservation will be covered. Protocols for freezing spermatozoa, testicular tissue, oocytes, ovarian tissue and embryos at various stages of development will be introduced. Problems associated with freezing particular tissue types will be discussed. **Laboratory:** Students will cryopreserve human sperm and mouse embryos using both manual and automated methods. Students will thaw frozen gametes and embryos and assess using standard criteria. Legal, ethical and policy issues associated with cryopreservation of human reproductive tissue will be introduced, including potential for transmission of infectious disease and issues associated with the term of storage of embryos. Lecture: 1 hour; laboratory 1 hour per week.
Prereq: CSC 528, CSC 615, CSC 616, CSC 617, CSC 618, and CSC 621 or consent of instructor.

CSC 625 Policy, Management, Ethical & Legal Issues in Assisted Reproduction (2)
(Change in description and prerequisite)

Change to:

CSC 625 Policy, Management, Ethical & Legal Issues in Assisted Reproduction (2)
Policy Current and anticipated regulation of assisted reproductive technology (ART) will be discussed. Laboratory management will be covered extensively and will include development of quality control and quality assurance programs for ART and andrology laboratories, Basic ethics principles will be introduced and ethical issues associated with the practice of ART will focus on controversial

and research procedures, including embryonic stem cell research, human cloning, fetal reduction, nuclear and cytoplasmic transfer, embryo freezing and storage, gestational hosts and surrogacy. Legal cases and rulings will be used to demonstrate liabilities associated with the medical and laboratory practice or ART.

Prereq: CSC 528, CSC 615, CSC 616, CSC 617, CSC 618, CSC 621, and CSC 624 or consent of instructor.

CSC 626 Clinical Practicum in Andrology (2)
(Change in title, credits and whatever else)

Change to:

CSC 626 Andrology Clinical Practicum (1-2)
Students must complete the checklist procedures while working under supervision. Andrology procedures will include semen analysis, sperm functions tests, microbiology, preparation of partner and donor semen for artificial insemination and cryopreservation of male gametes.
Prereq: CSC 528, CSC 615, CSC 616, CSC 617, CSC 618 or consent of instructor.

CSC 627 Clinical Practica in ART Laboratory (3)
(Change in title, credits, description, prerequisite)

Change to:

CSC 627 ART Clinical Practicum (1-3)
Students must complete the checklist procedures while working under supervision. All ART procedures will be performed under supervision using appropriate models for practice. Procedures will include, in vitro fertilization and related procedures, micromanipulations including intracytoplasmic sperm injection, assisted hatching and preimplantation genetic diagnosis and cryopreservation of oocytes embryos.
Prereq: CSC 528, CSC 615, CSC 616, CSC 617, CSC 618, CSC 621, CSC 624 or consent of instructor.

CSC 630 RLS Research for M.S. (4)
(Change in title, credits, description, prereq)

Change to:

CSC 630 RLS Research (3-5)
Research projects for students in Reproductive Laboratory Science will be registered under this course. Projects shall be related to the student's individual interest and shall be under the supervision of the appropriate faculty member. Students are allowed to register for this course for variable credit.
Prereq: CSC 528; others to be based on student background and nature of the project as determined by the RLS committee or consent of instructor.

Drop Course:

CSC 623 Reproductive Immunology (1)

Implementation: Fall, 2002

Distributed Learning Proposal: Master of Science in Clinical Sciences

Reproductive Laboratory Science Track

The courses in this proposal are part of the Reproductive Laboratory Science (RLS) track in the Master of Science degree in Clinical Sciences. Faculty members in the Reproductive Laboratory Science track are confident that a distributed learning format for selected lecture courses, combined with a modular delivery system for laboratory-based courses, would rapidly respond to the national shortage for trained embryologists by making the RLS program more accessible for both traditional and non-traditional students. Our RLS graduate program, the only one of its kind in the United States, was approved as a traditional program, requiring two-to-three years on campus in Lexington for completion. This approach does not respond to individuals wishing to obtain education in this area, but who for personal, professional or financial reasons are unable to move to Lexington for this extended period nor does it respond to professionals already employed in assisted reproductive technology laboratories who wish to further their education for the advancement of the laboratory in which they are already employed.

The three one-credit hour distributed learning courses would contribute to the overall strategy designed to make the program more accessible and to respond to the national need for education in this nascent field. In addition to distributed learning, overall program strategies will include 1) the use modular lectures and laboratories to be delivered on campus with students receiving one-on-one laboratory instruction, and presentations by experts in each of the RLS disciplines [e.g. embryology, micromanipulation, cryopreservation, laboratory management, law and policy]; 2) use of computer tutorials for laboratory instruction in areas not permitting student practice [human embryology]; 3) clinical practica in assisted reproductive technology laboratories throughout the United States; and 4) collaborative student research projects with embryologists and clinicians in the field.

The three lecture courses (CSC 615 - Reproductive Laboratory Science (1); CSC 616 - Andrology (1); and , CSC 617 Reproductive Immunology & Microbiology (1)) delivered by distributed learning would allow students extended time to master background materials for the more intense modular classes when they come

Proposal: Graduate Certificate in Reproductive Laboratory Science (RLS)

Background: The College of Allied Health Professions Academic Affairs Committee recommends approval of the proposal for a graduate certificate in RLS. It has been

approved by the Graduate Council and the Senate Council. Approval of the Senate is contingent upon Graduate Faculty approval. Details of the certificate are presented below.

CURRICULUM CHANGES FOR RLS GRADUATE CERTIFICATE

Background

The proposal for the Graduate Certificate in Reproductive Laboratory Science (RLS) was approved by the CAHP Academic Council in Fall, 2001 (Appendix A; original proposal) and by the Graduate School (Appendix B; letter of approval from Dr. Jim O'Reilly) on April 24, 2001.

Since the proposal did not reach the Senate until early June, 2001, it was not possible to receive formal approval for Summer, 2001. Senate Council Chair Bill Fortune was willing to 'fast track' the proposal, but expressed concern that 9 credit-hours were not sufficient to cover the course material. Following meetings with Fortune, Dr. Lori Gonzalez, CAHP Dean for Academic Affairs and representatives from the Graduate School, the RLS faculty decided to offer the Graduate Certificate as a pilot for the 8-week Summer session, 2001 to address this concern.

Four students completed the following courses during Summer, 2001 in order to receive the Graduate Certificate in RLS:

- GS-21 Special Topical Graduate Course: Andrology
- GS-22 Special Topic Graduate Course: Assisted Reproductive Technology
- GS-23 Special Topical Graduate Course: Management, Ethics, Policy & Legal Issues in Assisted Reproduction
- GS-24 Special Topical Graduate Course: Clinical Practica in Andrology and ART

Although the Graduate Certificate was successful, and graduates are now employed in assisted reproductive technology (ART) laboratories, by the end of the session, both the RLS faculty and the students concurred with Senate Council Chair William Fortune that 9 credit-hours were not adequate for the material that must be covered. Also, it was determined that since many of the human ART/embryology procedures can legally only be observed by students during the laboratory rotation, hours for the clinical practica should be decreased by one credit hour, and additional time should be added to the campus-based RLS courses which include student laboratories. This would allow students to acquire more hands-on practice in embryology using animal models.

Following a review of the course content, the RLS faculty decided that the material should be offered in 12 credit hours, a time frame more consistent with other graduate certificate programs offered by the University of Kentucky. Following this decision, Dr. Doris Baker, Director of the RLS Graduate Certificate and Dr. Lori Gonzalez met with Fortune and with Dr. Nash to determine how to best deliver the graduate certificate in reproductive laboratory science. Professor Fortune suggested that, since courses were similar for both the RLS track in the MSc program in Clinical Sciences and the RLS Graduate Certificate,

revisions be made to accommodate both groups of students in the same class. Since students for the graduate certificate and the RLS track for the MSc are from different populations, there is not a competition among programs. The majority of students for the MSc are individuals with a B.S. degree in science who are not yet employed or those with an undergraduate degree who are currently employed in ART laboratories. Candidates for the RLS Graduate Certificate are primarily individuals who already hold graduate degrees, but who need the clinical training in order to be marketable. Combining the two groups for instruction is logical in terms of both efficiency and economy. One graduate faculty and one adjunct faculty are currently responsible for all courses for both the RLS track in the MSc program and the RLS graduate certificate, as well as supervision of all students in andrology and ART clinical practica. Numerous guest lecturers contribute to the RLS programs. All are experts in the RLS discipline in which they teach. The guest lecturers are tantamount to the success of RLS education, not only because they assist with the teaching load, but it is essential that physicians and scientists, current in the field, contribute to the instruction. Guest lecturers are professionals from the University of Kentucky, the region and the nation. In addition to the roster of guest lecturers, members of industry contribute to the RLS programs, providing laboratory materials, instructors for equipment use, and expensive instruments not presently available at U.K. due to limited resources. Although all guest instructors and members of industry are willing to contribute to the programs annually, the majority are unable to make this commitment more than once yearly.

Appendix A attached summarizes the courses for the RLS Graduate Certificate, credit hours, times taught and delivery method

The advanced, and laboratory-intense, campus-based RLS courses will be offered in a modular format of 1-3 week sessions. Since modular units will contain large amounts of didactic material and student laboratories will be limited to practice with animal oocytes and embryos, the following compensations will be incorporated:

- Students will receive introductory materials prior to the commencement of the modular unit.
- Final evaluation for each modular unit will not occur until the end of the semester, giving students time to reflect and time to complete the clinical practica where they will gain experience in the clinical setting with human oocytes and embryos in the clinical setting.

Appendix B summarizes the revisions for the RLS Graduate Certificate.

Charts for courses for the RLS track for the MSc in Clinical Sciences and the RLS Graduate Certificate are available upon request, as are samples of semester by semester time lines for each program.