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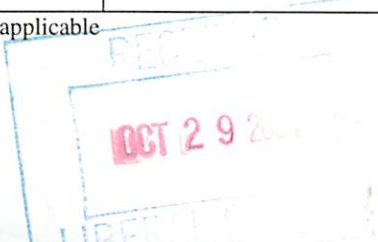
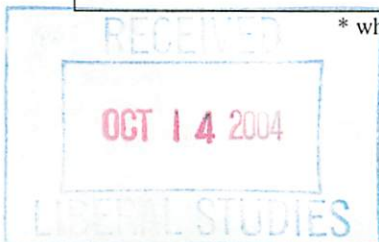
Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

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Proposing Department/Unit SDR/Science for Disaster Response	Phone 724-357-4482

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

1. Course Proposals (check all that apply) <input checked="" type="checkbox"/> New Course <input type="checkbox"/> Course Prefix Change <input type="checkbox"/> Course Deletion <input type="checkbox"/> Course Revision <input type="checkbox"/> Course Number and/or Title Change <input type="checkbox"/> Catalog Description Change	
SDR 486/586 Selected Topics in SDR	
<u>Current</u> Course prefix, number and full title	<u>Proposed</u> course prefix, number and full title, if changing
2. Additional Course Designations: check if appropriate <input type="checkbox"/> This course is also proposed as a Liberal Studies Course. <input type="checkbox"/> Other: (e.g., Women's Studies, Pan-African) <input type="checkbox"/> This course is also proposed as an Honors College Course.	
3. Program Proposals <input type="checkbox"/> New Degree Program <input type="checkbox"/> Program Title Change <input type="checkbox"/> Other <input type="checkbox"/> New Minor Program <input type="checkbox"/> New Track <input type="checkbox"/> Catalog Description Change <input type="checkbox"/> Program Revision	
<u>Current</u> program name	<u>Proposed</u> program name, if changing
4. Approvals	
Department Curriculum Committee Chair(s)	<i>Kenneth E. Hershman</i> <i>Wendy Lou Elcesser</i> Date: 8-22-04 4/6/04 4/6/04
Department Chair(s)	<i>Kenneth E. Hershman</i> <i>Richard Rueschman</i> <i>Tosser Ramsey</i> Date: 4/6/04 3/22/04
College Curriculum Committee Chair	<i>[Signature]</i> Date: 08/10/04
College Dean	<i>John S. Edr</i> Date: 8/19/04
Director of Liberal Studies *	
Director of Honors College *	
Provost *	
Additional signatures as appropriate: (include title)	
UWUCC Co-Chairs	<i>Gail S. Sechrist</i> Date: 10/28/04

* where applicable



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SYLLABUS OF RECORD

I. Catalog Description

SDR 486 Selected Topics in SDR

var-1-6 cr

Prerequisite: Permission of instructor and local, state or federal agency/organization authorization.

Lecture-laboratory course designed for first responders in the WMD community and related emergency planners. Topics will be related to the most recent advances in chemical, biological, radiological and nuclear (CBRN) detection, identification, analysis, and mitigation. Topics and instructors may be the same or vary.

II. Course Objectives

Specific objectives will vary according to topic. These objectives will be incorporated into the course syllabus developed by the faculty member(s) teaching the topic.

The overall purpose of this course is to provide the students with the theoretical knowledge and specialized laboratory skills associated with the most recent advances in the detection, identification, analysis, and mitigation of chemical, biological, radiological, and nuclear (CBRN) agents. This education will focus on improving the planning and response to terrorist acts involving CBRN agents related to weapons of mass destruction (WMD).

III. Course Outline

The course outline will vary according to topic, but will include both lecture and laboratory exercises. The course outline for a topic will be incorporated in the course syllabus developed by the faculty member(s) teaching the topic.

IV. Evaluation Methods

Undergraduate students will be evaluated differently from graduate students (as described in each evaluation method category). The final grade may be determined by any or all of the following methods:

Written Exams

Comprehensive, problem solving exams will be given during the course. Typical questions will be scenario based and related to CBRN detection, identification, analysis, and mitigation.

Undergraduates: 80% of the examinations will consist of matching, fill-in-the-blank or short answer essay questions, while the remaining 20% will be long essay.

Graduates: 100% of the examinations will be short answer essay questions.

Laboratory Component

Students will write laboratory reports, which include experimental observations, data analysis, calculations, and conclusions. Laboratory experiments provide hands-on experiences with the most recent technology for CBRN detection, identification, analysis, and mitigation.

Graduates: In addition to the above, each graduate student will select a laboratory exercise with the approval of the instructor and submit a detailed 8-10 page paper describing the recent advances related to the topic of the laboratory exercise. The paper will be due during finals week. The paper will be assessed for its content, data analysis, and value added to the WMD first responder community.

Capstone Event

The capstone event is a simulation of a real-life incident involving WMD. Students will be evaluated on their ability to assess an “incident site” for possible unknown CBRN

agents, identify and predict the hazards associated with the CBRN agents, and conduct the proper response call.

Graduates: Are expected to detail the physiological effect(s) of the chemical, biological, radiological and/or nuclear agent(s) involved in the capstone event.

V. Grading Scale:

Undergraduates; A: $\geq 90\%$, B: 80-89%, C: 70-79%, D: 60-69%, F: $< 60\%$

Graduates: A: $\geq 90\%$, B: 80-89%, C: 70-79%, F: $< 70\%$

VI. Attendance Policy

Attendance in both lecture and laboratory is expected of all students in the class. The policy is governed by university rules and regulations. The students are strongly encouraged to attend all classes.

VII. Required Textbooks, Supplemental Books and Readings

Required Textbook:

The required text will vary depending on the course topic. The required text will be identified in the course syllabus developed by the faculty member(s) teaching the topic.

Supplemental Books:

The supplemental books will vary depending on the course topic. The supplemental books will be identified in the course syllabus developed by the faculty member(s) teaching the topic.

VIII. Special Resource Requirements

None

VIII. Bibliography

The bibliography will vary depending on the topic selected. The bibliography will be identified in the course syllabus developed by the faculty member(s) teaching the topic.

COURSE ANALYSIS QUESTIONNAIRE

A. Details of the Course

- A1. How does this course fit into the programs of the department? For which students is the course designed (majors, students in other majors, liberal studies)? Explain why this content cannot be incorporated into an existing course.

This dual level course is an elective for students in the BS in Natural Science/Science for Disaster Response Track and the MS in Science for Disaster Response degree programs. It is not intended to be a Liberal Studies course. This course is designed for first responders – the emergency personnel who respond to any suspected incident of a chemical, biological, radiological and/or nuclear nature. The content can not be incorporated into an existing course because the course topics vary and are specific to counterterrorism.

- A2. Does this course require changes in the content of existing courses or requirements for a program? If catalog descriptions of other courses or department programs must be changed as a result of the adoption of this course, please submit as separate proposals all other changes in courses and/or program requirements.

This course does not require changes in any other course in the department. A new track (Science for Disaster Response) of the existing program of the BS in Natural Science will include this course among the electives.

This course will require a change in the MS in Science for Disaster Response program in order to include this course among the electives. A proposal for the inclusion of this course as an elective in the MS in SDR degree program will be forthcoming after this course has been approved at the undergraduate level.

- A3. Has this course ever been offered at IUP on a trial basis (e.g. as a special topic). If so, explain the details of the offering (semester/year and number of students).

Yes. The National Guard Bureau (NGB) contracted IUP to deliver two 11-day Special Topics Courses, one in Spring 2003 and the other in Spring 2004, to the NGB Weapons of Mass Destruction-Civil Support Teams (WMD-CSTs). The NGB has requested an 11-day Special Topics Course to be part of an ongoing sustainment plan for the education and training of the WMD-CSTs at IUP. The Special Topics course is on the NGB's Education and Training Matrix for the WMD-CSTs. It is a required course for the nuclear medical science officers (NMSOs) and a recommended course for the medical non commissioned officers (Med NCOs). The first NGB Special Topics Course was offered in January 2003 as BIOL 681 Special Topics. The topic was Biotechnology & Radiation Techniques in Microbiology. Twelve students (seven graduates and five undergraduates) attended this course. Due to the 600 level, only the graduate students were able to receive academic credit. The next 11-day Special Topics Course is scheduled in May 2004 for up to 24 students. The topic will focus on the practical applications for the two main instruments utilized by the WMD first responders for chemical analysis, the infrared spectrophotometer and the gas chromatograph/mass spectrometer. The students will gain experience in spectral interpretation for both instruments.

- A4. Is this course to be a dual-level course? If so, please note that the graduate approval occurs after the undergraduate.

Yes, this course is to be a dual level course.

- A5. If this course may be taken for variable credit, what criteria will be used to relate the credits to the learning experience of each student? Who will make this determination and by what procedures?

The credits associated with each offering of SDR 486/586 may vary depending on the number of hours IUP faculty instruct the students. The number of student contact hours in classroom instruction with IUP faculty will determine the number of credits, with 3 credits = 42 student contact hours in classroom instruction with IUP faculty being the

determining factor. The number of credits will be calculated and determined by the Director of WMD programs at IUP, who is in charge of scheduling the SDR classes. The number of credits will be approved by the WMD faculty at IUP.

- A6. Do other higher education institutions currently offer this course? If so, please list examples (institution, course title).

To the best of our knowledge, this course is unique in the United States. This lack of specific scientific education for emergency first responders at an accredited institution was one of the primary motivating factors for the National Guard Bureau (NGB) to approach IUP to develop this course.

- A7. Is the content, or are the skills, of the proposed course recommended or required by a professional society, accrediting authority, law or other external agency? If so, please provide documentation.

The content and skills associated with this course address the following standards and regulations required by the Department of Defense for the first responders in the WMD community:

- a. The Army Radiation Safety Program (AR 11-9).
- b. Environmental Protection Agency Radiological Emergency Response Plan
- c. The Army Chemical Agent Safety Program,(AR 385-61)
- d. Toxic Chemical Agent Safety Standards (DA Pam 385-61)
- e. Occupational Safety and Health Standards, Chapter 29-Code of Federal Regulations 1910.120(e)(8), Refresher training
- f. Biosafety in Microbiological and Biomedical Laboratories, U.S. Department of Health and Human Services Centers for Disease Control and Prevention and National Institutes of Health Fourth Edition, May 1999

B. Interdisciplinary Implications

- B1. Will this course be taught by instructors from more than one department or team taught within the department? If so, explain the teaching plan, its rationale, and how the team will adhere to the syllabus of record.

This course may be taught by one instructor or team taught by two or more instructors. The instructors will be the WMD faculty from the biology, chemistry, and physics departments. Individual faculty workloads and course content will likely dictate which WMD faculty member(s) are assigned to the course. If the course is team taught, the team will work together to develop the syllabus for the course.

- B2. What is the relationship between the content of this course and the content of courses offered by other departments? Summarize your discussions (with other departments) concerning the proposed changes and indicate how any conflicts have been resolved. Please attach relevant memoranda from these departments that clarify their attitudes toward the proposed change(s).

The content of this course is unique to active first responders in the WMD community. It may require intensive delivery and does require specific educational objectives that are not met by existing IUP courses.

- B3. Will this course be cross-listed with other departments? If so, please summarize the department representatives' discussions concerning the course and indicate how consistency will be maintained across departments.

This course is not cross-listed.

- B4. Will seats in this course be made available to students in the School of Continuing Education?

Only if the Continuing Education students have been accepted in the SDR program.

C. Implementation

- C1. Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the schedule(s) of current faculty. What will be taught less frequently or in fewer sections to make this possible? Please specify how preparation and equated workload will be assigned for this course.

Yes, faculty resources are adequate because of external funding. If no external funding is available, then additional faculty resources will be required. The new faculty members must be qualified to teach in the WMD programs at IUP.

This course will count as one preparation and, depending on student contact hours with IUP faculty, from one (1) to six (6) equated workload hours towards the workload of one faculty member, or split appropriately among the workloads of the faculty members who team teach the course. Each contact hour in laboratories in chemistry, biology, and physics is assigned one (1) workload hour.

If the topic involves biological agents, the faculty credentials include possession of a Ph. D. in medical or pathogenic microbiology and at least five years teaching experience balanced with three to five years of professional work background in the following areas, skill sets, and certificates related to Biological Safety:

- Medical/pathogenic microbiology, bio-safety, blood-borne pathogen standard operating procedures (SOPs), and knowledge of standard sterilization procedures
- Laboratory safety procedures and national laboratory standards to meet chemical surety standards as delineated by respective government SOPs.

If the topic involves chemical agents, the faculty credentials include possession of a Ph.D. in organic chemistry and a minimum of five years teaching experience, balanced

with three to five years of professional work experience in the following areas, skill sets, and certificates. The qualified faculty member will have:

- Experience in general organic chemistry; environmental sample techniques; analytical techniques; spectroscopic methods of molecular structure determination using gas chromatography/mass spectrometry and infrared spectroscopy; recognition, evaluation, and management of nuclear, biological, and chemical weapons
- A thorough understanding of laboratory safety procedures and national laboratory standards to meet chemical surety standards as delineated by respective government standard operating procedures (SOPs)
- A Chemical Hygiene Officer certificate issued by the National Registry in Clinical Chemistry to ensure competent, safe laboratory operations, appropriate decontamination protocols, and compliance with chemical surety SOPs.

If the topic involves radiology/nuclear agents, the faculty credentials include possession of a Ph.D. in experimental nuclear physics and a minimum of five years teaching experience, balanced with three to five years of professional work experience in the following areas, skill sets, and certificates. The qualified faculty member will have experience in radiation detection training, nuclear radiology health and safety, possess a certificate accepted by the Nuclear Regulatory Commission, and demonstrate five years of conducting training at a facility using radioactive materials and radiation-producing machines.

C2. What other resources will be needed to teach this course and how adequate are the current resources? If not adequate, what plans exist for achieving adequacy? Reply in terms of the following:

*Space

*Equipment

*Laboratory Supplies and other Consumable Goods

*Library Materials

*Travel Funds

Space: Presently, this degree program is being conducted using the facilities in IUP's science building, Weyandt Hall. However, plans are underway to renovate the second floor of Walsh Hall for the WMD programs. This renovation is scheduled to begin at the end of the Spring 2004 semester. The WMD programs are under the umbrella of IUP's John P. Murtha Institute of Homeland Security. The WMD programs are designated to have space in this building when it is constructed.

Equipment: Specialized equipment, including a BSL3 glove box, DNA thermal cycles, computer-interfaced microscopes, a digital photo documentation system, gel electrophoresis apparatus, a basic DNA facility station (pipettes, balances and micro centrifuges), autoclave, HAPSITE GC/MS, TravelIR spectrophotometer, scintillation detectors, photo-multiplier tubes, gas-filled detectors, Geiger-Muller counters, and gamma spectrometers equipped with FieldSPEC NaI detector system and ISOCART Germanium detector system have been provided by the DoD through the WMD-REALITI contracts. In the event that contract money is not available to purchase equipment, ESF funds will be used to purchase equipment, or the WMD faculty will write grant proposals for specialized equipment.

Laboratory Supplies: Laboratory supplies have been provided by the DoD through the WMD-REALITI contracts. In the event that contract money is not available to purchase laboratory supplies, funds from the WMD operating budget will be used to purchase the laboratory supplies. This money will be generated from the indirect funds acquired by contracted offerings of the WMD courses or by funds generated by tuition and student fees.

Library: When this course is funded by external money, Concurrent Technologies Corporation (CTC), will package the materials needed by the students. In the event that the course is not funded by external money, students will purchase the required text at a local copying business. Students may purchase the optional supplemental text at the Co-op Store or online.

Travel Funds: not applicable

- C3. Are any of the resources for this course funded by a grant? If so, what provisions have been made to continue support for this course once the grant has expired? (Attach letters of support from Dean, Provost, etc.)

Yes. So far, all resources for this course have been funded by the DoD and the National Guard Bureau (NGB). Contracts with these agencies are expected to continue for several years. However, IUP is prepared to support this course through ESF funds and tuition if external funds are not available. Additionally, IUP has actively sought and acquired funds for a facility to house the WMD courses.

- C4. How frequently do you expect this course to be offered? Is this course particularly designed for or restricted to certain seasonal semesters?

This course will be offered annually depending on student demand and faculty availability.

- C5. How many sections of this course do you anticipate offering in any single semester?

One section will be offered at a time.

- C6. How many students do you plan to accommodate in a section of this course? What is the justification for this planned number of students?

A maximum of 24 students can be accommodated in this class in which students do a considerable amount of laboratory work which limits the enrollment.

- C7. Does any professional society recommend enrollment limits or parameters for a course of this nature? If they do, please quote from the appropriate documents.

No professional society recommends enrollment limits or parameters for this course. However, the DoD recommends an Instructor to Student ratio of 1:15 and has set the parameters for this course.

- C8. If this course is a distance education course, see the Implementation of Distance Education Agreement and the Undergraduate Distance Education Review Form in Appendix D and respond to the questions listed.

This course is not a distance education course.

D. Miscellaneous

Include any additional information valuable to those reviewing this new course proposal.

No additional information is necessary.