**Fire Protection Studies / School of LEJA**

**Western Illinois University**

**2018-2019 B.S. Degree Fire Protection Services Major Assessment**

**Fire Science Option**

The Bachelor of Science Degree In Fire Protection Services is a comprehensive major with two options of study. *The Fire Science Option* is to focus is on students preparing for a future in the fire service. The *Fire Administration Option* curriculum is designed to support firefighters seeking promotion to supervisory positions. The Fire Science Option courses are delivered on the Macomb campus. The Fire Administration courses are delivered online.

**About the Assessment:** The assessment of the Fire Science Option of the Fire Protection Services Major was primarily accomplished by the use of a *Comprehensive Senior Exam* (SCE). The SCE is divided into 11 sections supporting six learning objectives. Each test section has between 10 and 15 questions from each of the 11 required courses within the option. All test questions are multiple-choice. The test is administered online, utilizing the “lock down browser” feature embedded in the D2L learning system. The browser prohibits opening other webpages or programs which might be used to assist student performance. Secondary assessment measures were also employed, these included results from Internship feedback and a student exit survey.

**Learning Outcome 1:** by use of lecture, quizzes written exercises and practical exercises, students will demonstrate an appropriate knowledge base in fundamental concepts & practices in firefighting. The curriculum reflects content defined by NFPA 1001, including but not limited to fire suppression activities, fire service history, terminology and fire prevention, and firefighter safety.

**Direct Measure 1:** Senior Comprehensive Exam (SCE) – Test Sections 1, Basic Firefighter Skills (FS 101) & section 2, Introduction to the Fire Service (FS 210)

**Results:** Learning Outcome 1 was assessed by sections 1 and 2 of the SCE. 24 students participated in the exam. The average score of section 1 was 53%, student performance averaged 81% on section 2. Their overall score related to objective 1 was 67%.

**Direct Measure 2**: Student Internship performance. A semester-long internship is required of students participating in the *Fire Science* option of the Fire Protection Services degree. The sponsoring agency sends weekly reports on student performance relative to cognitive, psychomotor, and affective suitability for a career in the fire service profession.

**Results:** 18 students participated in an internship at 18 individual emergency services agencies. Of the 18, all students successfully completed their internship.

**Impact:** In totality, student performance indicates significant student retention. However, the disparity between the 2 test subsections warrants faculty review. Section 1 is tied to a highly encouraged but not required course (FS 101), whereas Section 2 evaluates material in a required course (FS210). Either the evaluation instrument should be considered for revision, or consideration should be given to making FS 101 a required course.

Improvement will be sought through a reorganization of the course delivery. Beginning in the Spring Semester of 2020, FS101 – 102 & 103 will be taught in an intensive academy format in cooperation with the Quincy regional training facility.

**Learning Outcome 2:** utilizing lecture, quizzes written assignments, field experiences, and class presentations. Students will acquire and demonstrate knowledge in fire prevention & code enforcement. Specifically, the concepts of public education, fire protection systems, and code enforcement are introduced through lecture, assignments, and experiential exercises.

**Direct Measure:** Senior Comprehensive Exam (SCE) – Test Sections 4, Introduction to Fire Prevention (FS 212) & 11, Fire Code Inspection and Enforcement (FS 487)

**Results:** Learning Outcome 2 was assessed by sections 4 and 11 of the SCE. 24 students participated in the exam. The average score of section 4 was 53%, student performance averaged 85% on section 11. Their overall score related to objective 2 was 69%.

**Impact:** In total, student performance indicates significant retention. However,the disparity between the elements bears investigation. There seems to be an indication that the scores in 100 & 200 level classes may be negatively influenced by a lack of recency. Faculty will review strategies to re-introduce foundational material taught in lower division classes into related upper division curriculum.

**Learning Outcome 3:** Through reading assignments, section quizzes and written assignments and a capstone paper student will acquire appropriate knowledge in fire chemistry, physics, and behavior**.**

**Direct Measure**: Senior Comprehensive Exam (SCE) – Test Section 8, Fire Behavior and Dynamics (FS 444)

**Results:** Learning Outcome 3 was assessed by sections 8 of the SCE. 24 students participated in the exam. The average score of section 8 was 64%.

**Impact:** There is conviction among fire faculty that student learning can be advanced by shifting from an entirely theoretical discussion of fire behavior and increasing experiential opportunities. To this end, the school of LEJA has initiated an effort to acquire one of the abandoned buildings in the Lamoine Village complex with the intent of converting it into a burn laboratory and research facility. Burn facility will allow students to interact with fire behavior in the first person and experiment with fire conditions.

**Learning Outcome 4:** Students will demonstrate appropriate learning retention of legal and ethical requirements of a fire service career. Course material is introduced and reinforced via reading assignments, case study review, a capstone writing assignment, the creation of video diaries, and participation in interactive video exercises.

**Direct Measure:** Senior Comprehensive Exam (SCE) – Test Sections 7, Fire Service Ethics (FS 345) & 9, Political-Legal Foundations (FS 485)

**Results:** Learning Outcome 4 was assessed by sections 7 and 9 of the SCE. 24 students participated in the exam. The average score of section 7 was 49%, student performance averaged 58% on section 9. Their overall score related to objective 4 was 53%.

**Impact:** The low performance in the ethics section (FS 345) may be attributable to a curriculum re-design instituted last year. Most of the students taking section 7 studied under the old curriculum, and the testing instrument may have reflected the revised curriculum. This will be investigated, and future student performance monitored. Performance in section 9 is below the aggregate average of the test as a whole. Faculty will review section 9 of the test instrument, and monitor future performance. If poor performance continues, curriculum and instruction methods will be reviewed for revision.

**Learning Outcome 5:** Students will demonstrate appropriate Understanding of, Fire Ground Operations & Hazardous Materials Operations. Students attend lectures, complete tests and quizzes, and complete written assignments. Additionally, students participate in practical evolutions in emergency scene decontamination.

**Direct Measure**: Senior Comprehensive Exam (SCE) – Test Sections 7, Fire Tactics and Strategy (FS 211) & 6, Hazardous Materials Operations (FS 302)

**Results:** Learning Outcome 5 was assessed by sections 2 and 6 of the SCE. 24 students participated in the exam. The average score of section 7 was 40%, student performance averaged 63% on section 2. Their overall score related to objective 5 was 51%.

**Impact:** The 40% performance in section 2 of the exam bears investigation. As indicated in the impact statement for Outcome 2,there seems to be an indication that the scores in 100 & 200 level classes may be negatively influenced by a lack of recency. Faculty will review strategies to re-introduce foundational material taught in lower division classes into related upper division curriculum.

**Learning Outcome 6:** Students will demonstrate an appropriate understanding of the health & safety issues which may impact a fire service career**.** The curriculum reflects industry standards and best practices in the areas of fire service injury prevention, reduction of environmental exposure hazards, and firefighter wellness initiatives such as recommended diet and exercise programs. In addition to lecture and written assignments, students participate in an interactive firefighter safety program produced by the Illinois fire service institute.

**Direct Measure:** Senior Comprehensive Exam (SCE) – Test Section 5, Firefighter Health and Safety (FS 301)

**Results:** Learning Outcome 6 was assessed in section 5 of the SCE. 24 students participated in the exam. The average score of section 5 was 74%. Their overall score related to objective 6 was 74%.

**Impact:** A significant element in this learning objective is imparting the importance of maintaining firefighter strength, flexibility, and cardio vascular tone. Beginning with the Fall 2019 semester, the fire program has cooperated with the department of Kinesiology with the development of a firefighter fitness course. Future student performance will be monitored for effect on performance outcomes.

**General Performance Summary**:

**Comprehensive Exam Results**: Student performance on the whole, as demonstrated by the comprehensive exam, is as follows: The aggregate score of the 24 students taking the exam was 61% (rounded to the whole number.) 1 student scored in the 80th percentile. 14 students scored between 60% & 79%. 8 student scored between 40% and 59%. 1 student scored between 20% & 40%. The standard deviation of scores was 12%

Impact: By nearly a 2 to1 margin, the students demonstrated significant retention of material over their 4 years of study. These results are viewed as positive, thus reaffirming the effectiveness of present pedagogy.

**Student Exit Survey**: In order to assess the programs ability to address student needs, a short exit survey is included in the program assessment process. The survey is confidential and only administered to seniors participating in their last semester. It is understood that student responses are highly subjective and only an indirect measure of program performance. However, trends in student perception can be instructive. **Note**: the student exit survey results include responses from students in both the fire science and fire administration options of the fire protection services degree.

**Question 1**: Do you believe that the curriculum has prepared you for your future professional demands?

* **Results**: 85% of respondents answered in the affirmative by selecting a score of 3 or higher out of 5. More than half of respondents (52%) indicated a high level of satisfaction, with 14% reporting dissatisfaction.



* **Impact:** These results are positive, reaffirming the effectiveness of present pedagogy. However, improvement is possible. By reviewing the comments made in the suggestions for improvement section of the survey, there seems to be a strong indication that our curriculum would benefit from adding some additional elements. See Survey question 3 for specifics.

**Question 2**: Were there any courses that you felt were unnecessary? If so, which?

* **Results:** There were 26 responders to this question, some made more than 1 suggestion. A significant majority (54%) responded that all classes were necessary, all other responses were distributed among various classes. Of classes indicated as unnecessary, Political-Legal Foundations (FS 485) was most often cited (23%). It should be noted that this class is the programs WID course, and feedback may be attributable to student aversion to writing requirements.
* **Impact:** These results are positive, reaffirming the effectiveness of present pedagogy. Faculty will continue to monitor student responses, particularly regarding FS 485.

 **Question 3**: Do you have any recommended additions to the curriculum or classes you think WIU should add to the fire program?

* **Result**s: There was a significant group response indicating a need for increased psychomotor instruction. In particular the need for a basic skills instruction via classes a fire academy bestowing firefighter 1 certification (46%). Additional repeated suggestions included a paramedic program (13%) and the ability to conduct and award the Candidate Physical Aptitude Test (CPAT) certifications (17%).
* **Impact:** The fire program faculty concur with student opinion, both a fire academy and a CPAT facility are currently being pursued. Faculty are also pursuing the acquisition of one of the LaMoine Village buildings as a site for additional skills activities.

**Question 4**: If given the opportunity, would you choose the fire program at WIU again?



* **Result**: 90% of respondents replied yes to this question
* **Impact**: These results are positive, and affirm that students view the fire curriculum and its delivery positively. However, it really for growth and improvement. The addition of a bird laboratory at LaMoine Village will greatly improve student learning possibilities and outcomes. The implementation of a F.F. 1 certification Academy, a paramedic program and the ability to administer the candidate physical aptitude test will all greatly enhance our student’s ability to meet career goals post-graduation.