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| **Assurance of Student Learning Report****2020-2021** |
| *Ogden College* | *School of E ngineering and Applied Sciences* |
| *Floodplain Management Certificate 1763* |
| *Warren Campbell* |

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| ***Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages.*** |
| **Student Learning Outcome 1:**  **Students will demonstrate a familiarity with the National Flood Insurance Program (NFIP) and associated Federal regulations** |
| **Instrument 1** | CE 300 classroom quizzes, Midterm, and Final Exam – knowledge of the history of the NFIP, its development through several legislative initiatives, and its strengths and weaknesses are measured through daily quizzes and exams. Learning segments deal with FEMA forms such as the Elevation Certificate which is used to determine a building’s compliance with the NFIP.  |
| **Instrument 2** | CFM Exam – students have the option of taking the CE 300 Final or the Certified Floodplain Manager (CFM) Exam. Unfortunately, because of Covid, the Association of State Floodplain Managers did not offer the CFM Exam suring the Fall semester when CE 300 is offered. In the past, 64 WKU students have passed the CFM Exam which includes a map exercise and an elevation certificate exercise and other questions that test student knowledge of NFIP and Federal regulations. |
| **Based on your results, check whether the program met the goal Student Learning Outcome 1.** | **x Met** | **[ ]  Not Met** |
| **Student Learning Outcome 2:**  **Students will be able to perform the land surveys required to develop NFIP elevation certificates used in floodplain management.** |
| **Instrument 1** | CE 160/161 Surveying and Lab contains several exercises including autolevel surveys of elevations. These field exercises provide the skills needed by the student to complete an Elevation Certificate which is pivotal to determine a buildings compliance with NFIP regulations. |
| **Based on your results, check whether the program met the goal Student Learning Outcome 2.** | **x Met** | **[ ]  Not Met** |
| **Student Learning Outcome 3: Students will be able to use Flood Insurance Rate Maps (FIRMs) and Flood Insurance** |
| **Instrument 1** | CE 300 quizzes, Midterm and Final Exams – included many questions relating to determination of flood zones and flood elevations.  |
| **Based on your results, check whether the program met the goal Student Learning Outcome 3.** | **x Met** | **[ ]  Not Met** |
| **Student Learning Outcome 4:**  **Students will be able to determine flood elevations anywhere in the U.S.** |
| **Instrument 1** | CE 300 Midterm and Final Exam – students are expected to be able to find FEMA flood maps from the FEMA website, determine the flood zone, and estimate the base flood (100-year) flood elevation from the FEMA flood insurance study and from Flood Insurance Rate Maps.  |
| **Instrument 2** | CFM Exam – students have the option of taking the CE 300 Final or the Certified Floodplain Manager (CFM) Exam. Unfortunately, because of Covid, the Association of State Floodplain Managers did not offer the CFM Exam suring the Fall semester when CE 300 is offered. In the past, 64 WKU students have passed the CFM Exam which includes a map exercise and an elevation certificate exercise and other questions that test student knowledge of NFIP and Federal regulations. |
| **Based on your results, check whether the program met the goal Student Learning Outcome 4.** |  **Met** | **x Not Met** |
| **Student Learning Outcome 5:**  **Students will be able to use, create, and apply GIS data used for floodplain management.** |
| **Instrument 1** | GISC 316 – students learn the fundamentals of GIS |
| **Instrument 2** | CE 461 – students are introduced to the use of GIS to determine watershed boundaries, watershed areas, and other parameters needed to develop watershed models. |
| **Based on your results, check whether the program met the goal Student Learning Outcome 5.** | **x Met** | **[ ]  Not Met** |
| **Student Learning Outcome 6: Students will be able to develop basic watershed models used to determine flood discharges.** |
| **Instrument 1** | CE 461 class quizzes and final project – Students use HEC HMS to develop watershed models used to design detention ponds and other drainage facilities. By the time they complete the project, they have an easy familiarity with watershed modeling software.  |
| **Instrument 2** | CE 462 classroom exercises and midterm exam – students will use HEC HMS to model watersheds and determine flood discharges. |
| **Based on your results, check whether the program met the goal Student Learning Outcome 6.** | **x Met** | **[ ]  Not Met** |
| **Student Learning Outcome 7:**  **Students will be able to pass the Certified Floodplain Manager Exam** |
| **Instrument 1** | CFM Exam – the exam is based on the body of knowledge of floodplain management and involves studying thousands of pages of Federal regulations, guidance documents, and other materials. Unfortunately during 2020 I was not able to administer the CFM exam because of Covid. The Association of State Floodplain Managers did not offer it this entire year. ASFPM is in the process of making it a digital exam which should become available this year (2021).For this reason we could not demonstrate this outcome this past year. However, in the past 64 of our students have passed the CFM Exam.  |
| **Based on your results, check whether the program met the goal Student Learning Outcome 7.** | **Met** | **x Not Met** |

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| **Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)**  |
| I am currently working to make CE 300 Floodplain Management a Colonnade course. The proposal should be ready to go by beginning of Fall classes. Also, FEMA is implementing Risk Rating 2.0 which completely changes how flood risk is assessed and how the cost of flood insurance is determined. This will be in effect October 1, 2021. This will require a major revision of CE 300.  |

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| **Student Learning Outcome 1** |
| **Student Learning Outcome**  | **Students will demonstrate a familiarity with the National Flood Insurance Program (NFIP) and associated Federal regulations** . This includes a knowledge of the history and development of the NFIP, its strengths and weaknesses, and its requirements for construction in the 100-yr floodplain. |
| **Measurement Instrument 1**  | CE 300 classroom quizzes, Midterm, and Final Exam – knowledge of the history of the NFIP, its development through several legislative initiatives, and its strengths and weaknesses are measured through daily quizzes and exams. Learning segments deal with FEMA forms such as the Elevation Certificate which is used to determine a building’s compliance with the NFIP.  |
| **Criteria for Student Success** | *Students will pass exams and quizzes to achieve a grade of C or better in CE 300.* |
| **Program Success Target for this Measurement** | 80 % of class pass CE 300 | **Percent of Program Achieving Target** | 100% |
| **Methods**  | There were 22 students who completed CE 300 in the Fall of 2020. Because of Covid, all quizzes and exams were online. This posed some problems, but students were able to accumulate enough points to get at least a C in the course. A major part of the course is devoted to the National Flood Insurance Program. |
| **Measurement Instrument 2** | CFM Exam – not applicable in 2020 because we were not able to offer it because of Covid. |
| **Criteria for Student Success** | **N/A** |
| **Program Success Target for this Measurement** | **50 % pass rate (very difficult exam)** | **Percent of Program Achieving Target** | **N/A** |
| **Methods** | **Exam is normally proctored on Saturday before final exam week. However, Covid prevented us from offering it. In 2021 it will be offered as a digital exam if ASFPM completes the conversion to digital format by the 1st of December.** |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | **[ ]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| CE 300 was offered as an online course with regular meeting times. Students are offered the opportunity ot do extra credit projects including floodplain management-related book reports. All exams and quizzes were online. |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| Major changes are coming in the NFIP. These changes will be implemented on October 1, 2021 in the form of Risk Rating 2.0. This FEMA initiative is aimed at making the National Flood Insurance Program viable and to more accurately assess flood risk. It completely changes the current method of determining the cost of flood insurance. This change has major implications for both Measurement Instruments. Based on what has been released so far, some of the learning outcomes will have to be changed. Since this is a transitional year for CE 300 offered this Fall, we will have to teach previous rating methods as well as the new rating methods.  |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| We will need to assess this outcome in 2022 once the new rating system has settled in. At that point we will know how learning outcomes have changed. |

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| **Student Learning Outcome 2** |
| **Student Learning Outcome**  | **Students will be able to perform the land surveys required to develop NFIP elevation certificates used in floodplain management.** |
| **Measurement Instrument 1** | **CE 160/161 – field determination of elevations** |
| **Criteria for Student Success** | 70% able to perform autolevel survey obtaining errors less than 0.05 ft |
| **Program Success Target for this Measurement** | 70% | **Percent of Program Achieving Target** | 90% |
| **Methods**  | Autolevel survey of loop |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.** | **[ ]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.) |
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| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
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| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
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| **Student Learning Outcome 3** |
| **Student Learning Outcome**  | **Students will be able to use Flood Insurance Rate Maps (FIRMs) and Flood Insurance** |
| **Measurement Instrument 1** | CE 300 quizzes, Midterm and Final Exams – included many questions relating to determination of flood zones and flood elevations.  |
| **Criteria for Student Success** | Students able to determine flood zones and base flood elevations |
| **Program Success Target for this Measurement** | 80% | **Percent of Program Achieving Target** | 91% |
| **Methods**  | Quizzes, classroom exercises, and exams. |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | **[ ]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| **This was a major element of CE 300 and was emphasized. Most students were able to identify relevant flood maps, determine correct flood zones from FIRMs. Fewer were able to determine base flood elevations (BFEs) which is a much more difficult task. It is very easy to make a mistake even for experienced floodplain managers.** |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| Starting October 1, 2021 everything is going to change. Students will still need to determine flood zones to be able to tell who has a mandatory flood inbsurance requirement. They will have to be able to determine BFEs. However, methods of estimating the cost of flood insurance is going to change and be more like what would be done by private insurance companies. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| FEMA has provided some information on changes that will be implemented on October 1, but much of it is vague. We will know more once RR 2.0 is implemented. This requires some significant changes in CE 300 and in the CFM Exam. These student learning outcomes for CE 300 are going to have some changes as well. With the vague information available I am not sure what changes will be necessary. Also, the changes mean that the text used for the course will need modification. I will supplement course materials with the information I have on RR 2.0. 2021-2022 will definitely be a transition year.  |

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| **Student Learning Outcome 4** |
| **Student Learning Outcome**  | **Students will be able to determine flood elevations anywhere in the U.S.** |
| **Measurement Instrument 1** | CE 300 Midterm and Final Exam – students are expected to be able to find FEMA flood maps from the FEMA website, determine the flood zone, and estimate the base flood (100-year) flood elevation from the FEMA flood insurance study and from Flood Insurance Rate Maps.  |
| **Criteria for Student Success** | Students able to find BFEs accurate to within 0.1 ft for most locations |
| **Program Success Target for this Measurement** | 70% | **Percent of Program Achieving Target** | 50% |
| **Methods**  | Teaching someone to calculate a BFE without any classroom guidance is difficult. Because of Covid, this had to be taught online. Normally, I would give students a FIRM and a building location and a Flood Insurance Study, and ask them to find the BFE. This was not possible this year and results were disappointing, but not unexpected. |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | **[ ]  Met** | **x Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| **Students were forced to use just a taped video that demonstrated determination of BFEs. Normally, this would be done in a classroom exercise.** |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| N/A |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Being back in the classroom will improve student learning. I will provide the exercises and help students directly as they find BFEs. |

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| **Student Learning Outcome 5** |
| **Student Learning Outcome**  | **Students will be able to use, create, and apply GIS data used for floodplain management.** |
| **Measurement Instrument 1** | GISC 316 – students learn the fundamentals of GIS |
| **Criteria for Student Success** | Pass GISC 316 |
| **Program Success Target for this Measurement** | 70% | **Percent of Program Achieving Target** | I do not have the information to answer this question. It would reside with instructors of GISC 316. I also do not know if any students aspiring to the certificate actually took GISC 316 this past year since that information is not routinely provided to me. |
| **Methods**  | Ask GISC 316 instructors |
| **Measurement Instrument 2** | CE 461 – students would normally be introduced to watershed delineation with GIS. Unfortunately I could not provide ArcGIS to students for various reasons. We had to use Power Point which is a very poor substitute and does not allow us to calculate watershed areas. |
| **Criteria for Student Success** |  |
| **Program Success Target for this Measurement** |  | **Percent of Program Achieving Target** |  |
| **Methods** |  |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | **[ ]  Met** | **x Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| **Students were forced to use just a taped video that demonstrated determination of BFEs. Normally, this would be done in a classroom exercise.** |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| N/A |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Being back in the classroom will improve student learning. I will provide the exercises and help students directly as they find BFEs. |

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| **Student Learning Outcome 6** |
| **Student Learning Outcome**  | **Students will be able to pass the Certified Floodplain Manager Exam.** |
| **Measurement Instrument 1** | CE 300 – Students are exposed to about 2/3 of what they need to pass the exam. Additional study of FEMA documents is required. However, CE 300 provides the basis to achieve CFM status. |
| **Criteria for Student Success** | Pass CFM Exm |
| **Program Success Target for this Measurement** | 70% | **Percent of Program Achieving Target** | N/A |
| **Methods**  | Up until 2020, the CFM Exam was offered the Saturday before Final Exam week. However, in 2020 the Covid pandemic caused ASFPM to cancel CFM Exams. None were given in 2020 so we did not have the opportunity to verify this learning outcome. We expect the CFM Exam to be available in digital form in 2021 and hope to be able to offer it at the certified Scantron Test Center on campus. In the past, 64 WKU students were able to pass the exam after taking CE 300. |
| **Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.** | **[ ]  Met** | **x Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| **Students were forced to use just a taped video that demonstrated determination of BFEs. Normally, this would be done in a classroom exercise.** |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| N/A |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Being back in the classroom will improve student learning. I will provide the exercises and help students directly as they find BFEs. |