| UMW Research & Creativity Day Application | | |
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| **Research Information:** | | |
| **Student Name(s):** | | |
| **Faculty Research Mentor:** | | |
| **Project Type:** Oral  Poster  Performance  Exhibit | | |
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| **Indicate all times (from 9am – 4 pm) on Friday, April 26th when available to present project:** | | |
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| **Panel Presentations Only:** | | |
| Faculty member - Panel/Session Chair: | | |
| Academic Department of the Faculty Member: | | |
| Panel Session Title: | | |
| Technology/Equipment requirements: (computer and projector will be available for oral presentations) | | |
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| **Group Presentations Only:** | | |
| Contact Person: | Email: | Phone: |
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| **Research and Creativity Day Program Information**: The following information will be in included in the R&C Day Program (see example). Please keep the text to 300 words maximum. | | |
| **Student researcher(s):**        **Major:**        **Research Mentor(s):**  **Project Title:**        **Abstract Text:** | | |
| Example Program Text (see below): | | |
| **Student Researcher(s): Andrew Franklin, Claude Thompson and Chloe Morton**  **Major: Chemistry**  **Research Mentor(s): Randall Reif**  **Project Title: Quantification of Nitrate and Phosphate in the Rappahannock River by UV-Vis Spectroscopy**  Nitrate and phosphate are key factors in determining water quality in environmental systems. These two chemicals are major contributors to plant growth and as such affect the extent of oxygen available to animal life. If this level of available oxygen falls too low, the water system can "die" in the sense that it is no longer inhabitable to animal species and can go so far as to eutrophicate over time. Nitrate can be measured by UV-Vis spectroscopy in the mid-UV region, but is susceptible to organic compound interference. To mitigate this, the sample of river water will be filtered through a micro filter and an approximation of organic interference will be determined from the absorption in a region nitrate is known not to absorb. Phosphate, however, does not absorb light and as such can't be directly measured by UV-Vis spectroscopy. As such a conjugation to the phosphate must occur to allow for quantification. Through reaction with molybdate and antimony-tartrate, phosphate creates a short lived complex that produces color in proportion to its concentration. Therefore, a calibration curve will be created from sodium nitrate standards to test for interference subtracted nitrate levels. Additionally, standards of an antimony-phosphate-molybdate complex will be used to create a calibration curve that will then allow for phosphate determination after a sample of river water is processed in the same manner as the standards. Results are expected to fall in the range of 1-10ppm for nitrate and .025-0.1ppm for phosphate. It is expected for elevated rates of contamination to be observed due to the extensive farming near the river, however as the river hasn't shown signs of extensive eutrophication we aren't expecting to find results over the maximum ranges. | | |
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**Return completed application to Grant Woodwell –** [**gwoodwel@umw.edu**](mailto:gwoodwel@umw.edu)**.**