SAMPLE

**(\*\*Red color is for explanation and example -- Be sure to remove**

**all red before your submission)**

Analysis of Normality and Variance of

an environmental risk assessment model

Project Final Report

CEE 700/800 CEE Experimental Methods

Spring Semester, 202X

Submitted to

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### ABstract

## Analysis of Normality and Variance of an environmental risk assessment model

Name: John Doe

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CEE 700/800 CEE Experimental Methods

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|  |
| --- |
| Abstract (300 words Maximum) |

 **KEYWORDS:** Keyword(1); Keyword(2); Keyword(3); Keyword(4); Keyword(5)

 (Five keywords Maximum)

##### Example)

**KEYWORDS**: Bacteria Source Tracing (BST); Fecal coliforms; Total Maximum Daily Load (TMDL); Waste Load Allocation (WLA)

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(sample page numbers

-- yours will be different)

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a descriptive title and avoid any ambiguity. 3

1.2. Title of Table 1.2. in the SECTION 1. 7

2.1. Title of Table 2.1. in the SECTION 2. 7

(and so forth)

#### EXAMPLE

Table 1. Velocity Null Location As a Function of Intake Rate at a

Given Rainfall Intensity.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Rainfall Intensity, I(in/hr) | Flow to Intake From Upstream, QU(cfs) | Total Water Production, QT(cfs) | Intake Range for Null Velocity, QI(cfs) | Equation for Velocity Null Location, LN(I)(miles)  |
| 0.000 | 18.16 | 23.00 | 18.16 – 23.00 | 0.413 QI - 7.50 |
| 0.005 | 22.64 | 30.89 | 22.64 – 30.89 | 0.242 QI - 5.48 |
| 0.010 | 30.75 | 43.11 | 30.75 – 43.11 | 0.162 QI - 4.98 |
| 0.015 | 38.81 | 55.25 | 38.81 – 55.25 | 0.122 QI - 4.74 |
| 0.020 | 46.85 | 67.38 | 46.85 – 67.38 | 0.097 QI - 4.55 |
| 0.025 | 54.89 | 79.51 | 54.89 – 79.51 | 0.081 QI - 4.44 |
| 0.030 | 62.95 | 91.67 | 62.95 – 91.67 | 0.070 QI - 4.42 |
| 0.035 | 71.00 | 103.80 | 71.00 – 103.80\* | 0.061 QI - 4.33 |
| 0.040 | 79.06 | 115.59 | 79.06 – 115.59\* | 0.055 QI - 4.36 |

 \* Maximum permitted intake rate is 93 cfs.

**Applicable Only If you have any Figures in the main body text section**

### LIST of FIGUREs

 *Figure Page*

1.1. Title of Figure 1.1. in the SECTION 1. Provide

a descriptive title and avoid any ambiguity.. 3

1.2. Title of Figure 1.2. in the SECTION 1. 7

2.1. Title of Figure 2.1. in the SECTION 2. 7

(and so forth)

#### EXAMPLE



Figure 2.1. Accuracy, Precision and Bias Youden Plot of TBT Intercalibration Exercises (May 200X) with a 95% Confidence Interval for VAWQS Sample Range Subset, 6.1-59 ng/L; N = 30; n = 10 per laboratory

### SECtion 1. Introduction

**1.1. Background and Literature Review**

(It should be clearly, simply, and consistently stated. Mention of several different research problems will confuse the readers.)

(and so forth)

(Literature Review -- It should be a concise summary of the major findings from other research on the same problem. If literature on other, different, research problems is presented, it will confuse or mislead readers. The literature review should not be simply "who said what" – instead, it should be used as supporting material for your project problem conceptualization)

**1.2. Study Site**

(Usually the nature of your study and sample data can be explained better if you give where the sample data came from and how it has been obtained, etc.)

(and so forth)

Each page should be numbered properly in the bottom, aligned right using your last name and numeral combination. (i.e., Doe 1, Doe 2, and so forth). You don't have to number Appendices.

### SECtion 2. objectives

**2.1. Objectives**

This study will focus on a dynamic model to accommodate mass flow in Pea Hill Arm to accommodate pool elevation differences between Pea Hill Arm and the main lake. The Saint Venant equations will be use to conceptualize a model that will simulate spatiotemporal variations of flow and, the advective-dispersion equations will be used to model pollutant transport. Objectives of this study are as follows:

1. To conceptualize on a dynamic spatiotemporal water quality model framework to characterize and simulate turbidity and total suspended solids (TSS) system responses in Pea Hill Arm of Lake Gaston and,
2. To derive the optimal operation criteria for maximizing pipeline intake rate without causing velocity null conditions seasonally or during storm events which would cause silt build-up in lower Pea Hill Arm.

(and so forth)

**2.2. Test of Hypotheses**

(provide your hypotheses in a standard Ho and Ha format – explain clearly and specifically why you are testing such hypotheses for proving what/which objectives)

Hypothesis #1

 Ho : …..

 Ha : …..

Hypothesis #2

 Ho : …..

 Ha : …..

(and so forth)

### SECtion 2. Data

**3.1. Source of Sample Data**

(Again, briefly reiterate what, where, when, and how your sample data was obtained)

(and so forth)

**3.2. Validation of Data Distribution**

(Do descriptive univariate analysis first. Further validation would all depend on type(s) of analysis you need to test hypotheses – Normal? Linear? Etc.)

(and so forth)

**3.3. Data Filtering**

(Outliers? What criteria were used to define outliers in your case? Was it necessary? Why and why not?)

(and so forth)

### SECtion 4. PROCEdure and methodology

**4.1. Assumption and Limitation**

(Without clearly stating these, you analysis means very little)

(and so forth)

**4.2. Methods**

(Why this particular method? Do what? Is the method a right one for your test of hypotheses? The methods should be described sufficiently so that someone could replicate the research but should not include unnecessary detail.)

(and so forth)

**4.3. Procedures and Analysis**

(Succinctness is the virtue -- Do not reiterate “as is” from textbook and reference. You may consider using a flowchart of procedures to summarize your rationale.

Provide thorough and correct analysis that you had performed. You can further expand additional rationale for your analysis and interpretation in “DISCUSSION AND CONCLUSION” section)

(and so forth)

### SECtion 5. Discussion and conclusion

**5.1. Results**

(Without clearly stating these, you analysis means very little. The author should **summarize** the most important findings for the reader, linking them to initial problem conceptualization, objectives and test of hypotheses. Also, author **should not** **list every finding, leaving the reader to sort out what is most important**.)

(and so forth)

**5.2. Discussion**

(The discussion should be a reasoned analysis of the results. It should describe any problems encountered during the research, as well as limitations of the study.)

(and so forth)

**5.3. Conclusion**

(The conclusions should be drawn from the results of the study at hand; they should not be a restatement of them. New data or findings should not be presented in the conclusions. All conclusions should have a clear basis in the results of this study.

Keep in mind that at this juncture, the readers usually do not remember what the original hypothesis was, and such statement as "...null hypothesis was rejected...." does not mean anything to your readers. Talk to and spell it out for your readers, not to yourself.)

(and so forth)

**5.4. Recommendation (Most important part of your report)**

(Always express your conclusion in forms of recommendation for possible future actions. Finding whether a condition is right or wrong is one thing. But good analysis should also be able to suggest a way to correct/obviate the current problem or make improvements. All of the recommendations must be linked to the **objectives** of and **results** from your study. )

(and so forth)

### References

Brennan, R.B., J.T. Scott, A.N. Sharpley, H.T. Lally, H.P. Jarvie, M.J. Bowes, B.E. Haggard, E. Gbur, (2017), *Linking Soil Erosion to Instream Dissolved Phosphorus Cycling and Periphyton Growth*, Journal of American Water Resources Association, DOI: 10.1111/1752-1688.12534.

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Royston, J.P. (1982), *An Extension of Shapiro and Wilk’ W Test for Normality to Large Samples*, Applied Statistics, 32:115-124.

Lenz, B.N., (2003), Analysis of streamflow and water-quality data at two long-term monitoring sites on the St. Croix River, Wisconsin and Minnesota, U.S. Geological Survey Water-Resources Investigation Report WRI 03-4334, United States Government Printing Office.

### Appendix i. Sample Data Used in the Study

a) Data Name 1 : Daily Rainfall Data, 2000-2015, Norfolk, VA (NWS)

b) Data Name 2 : Land Use, Suffolk County, VA (NRCS)

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(Include Data directly to this report – do not provide Data in a separate file(s))

### Appendix iI. SAS Estimates and Outputs

a) Estimate Name 1 : Particulate Phosphorous Estimates (EPA QUAL2EU)

b) Output Name 2 : Output for Data Name 1 (EPA HSPF)

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**(Include Outputs directly to this report – do not provide Outputs in a separate file(s))**