**Purdue Northwest Curriculum Document Coversheet**

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| **Document No:**(According to [Instruction](http://faculty.pnw.edu/blog/curriculum-document-approval-procedures/)s[[1]](#footnote-1)) | CES 18-13 NEW PROG STAT | **Approval by Faculty Senate:** (Leave Blank) | 3/8/2019 |
| **Proposed Effective Date**  | Fall 2019 | **Date Reviewed by Senate Curriculum****Committee:** (Leave blank) | 2/22/2019 |
| **Submitting Department:**(Name of both Dept & College/School ) | MSCS/CES | **Name(s) of Library Staff Consulted:** (NA if not required) | N/A |
| **Date Reviewed by Department**  | 11/16/18 |  |  |
| **Submission Date:**(Date sent to College/School Curr Comm after Dept Review) | 11/20/18 | **Will New Library****Resources Used?** | [ ]  **Yes**[x]  **No** Double-click to check Yes / No. |
| **Date Reviewed by College/School Curriculum Committee**  | 12/14/18 | **Form 40 Needed?**(Double-click one box.)Registrar will complete Form 40 **after** Senate approval of document. | [x]  **Yes** New courses or any course change, check **YES**[ ]  **No** For **all other** curriculum matters, check **NO**. |
| **Contact Person(s):**(Name & Title) | Dr. Jonathan Kuhn, Associate Professor of Statistics; Dr. Catherine Murphy, Head, MSCS |  |  |

Unless marked “Leave blank” all parts of this form must be filled in **before** sending to Secretary of the Faculty Senate.

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| **Task (check all that apply and fill out sections appropriate for each change).** [ ]  Program/Concentration Change or New Program/Concentration Proposal: Complete Section I, III, & IV[ ]  Minor Change or New Minor Proposal: Complete Section I (delete sections III & IV)[ ]  Certificate Change or New Certificate Proposal: Complete Section I (delete sections III & IV)[x]  Course Change or New Course Proposal: Complete Section II (delete sections III & IV) |
| **Program name**.Bachelor of Science in Applied Statistics |
| **Degree name(s).** (If applicable.)Bachelor of Science in Applied Statistics |

**Section II: This section is for changes in courses only**

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| **Subject.** Time Series (new course): This course introduces the statistical methodology and models required to analyze time series data in practice.  |
| **Justification.** Time Study Statistician, Magnetic Resonance Spectroscopy Technician (studying brain waves for example), Stock Market Analyst are examples of positions which would use time series analysis. This course would appeal to students in biochemistry, actuarial science and economics. This course is one of the three second-level advanced applied statistics in the statistics program.  |

Use the **Current** and **Proposed** spaces below for course changes only. Otherwise, mark “N/A”

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| **Current:** (Course changes: include entire present catalog information. Leave blank if new course)N/A | **Proposed:** (Course changes: include entire new catalog information.)

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| **STAT 46600 – Time Series** Credit Hours: 3.00. This course introduces the statistical methodology and models required to analyze time series data in practice. The course emphasizes both modeling methodology (model identification, estimation and diagnostics) and the practical implementation of time series modeling using existing statistical software. Topics include Analysis of time series and forecasting methods, Stationary processes, ARMA models, Autocorrelation function, Spectral analysis, Nonstationary time series, ARIMA models, SARIMA models, Unit roots and Volatility models.. Typically offered Fall, Spring. **Levels:** Graduate, Professional, Undergraduate **Schedule Types:** classroom, hybrid, online **Prerequisite: minimum grade of C from both STAT 34600, STAT 43100** |

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| **Is this course also:** | [ ]  **General Education** | **Currently Designated ExL (see** [**instructions[[2]](#footnote-2)**](http://faculty.pnw.edu/blog/curriculum-document-approval-procedures/)**)** [ ]  |

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| **Course Objectives / Learning Outcomes.** (New courses only. List main outcomes. If lengthy, attach separate page.)1. Define time series data in an appropriate statistical framework
2. Summarize and carry out exploratory and descriptive analysis of time series data
3. Modeling univariate time series data with Autoregressive and Moving Average Models
4. Demonstrate a working knowledge of sampling techniques
5. Model identification, model estimation, and assessment of the suitability of the model
6. Using a model for forecasting and determining prediction intervals
7. Relationships between time series variables cross correlation and regression models
8. Analyzing the frequency domain - Periodograms, Spectral density, identifying the important periodic components of a series
9. Explore some volatility models
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| **Impact on Students.** (State “N/A” if proposal will not greatly affect students.) |
| **Impact on University Resources.** (State “N/A” if proposal will not require new resources, faculty or funds.) |
| **Impact on other Academic Units.** (State “N/A” if proposal will not affect other units.) (Include name of person in affected area this was discussed with.) |

(Boxes will expand and spill over onto next page to accommodate your typing.)

1. <http://faculty.pnw.edu/blog/curriculum-document-approval-procedures/> [↑](#footnote-ref-1)
2. <http://faculty.pnw.edu/blog/curriculum-document-approval-procedures/> [↑](#footnote-ref-2)