**ANNUAL FACULTY ACTIVITY REPORT**

*For the period 1 JULY 16 – 30 JUNE 17*

**Form Version Date: 19 June 2016**

|  |  |  |  |
| --- | --- | --- | --- |
| **Full Name:** | Jason Freels | **Academic Rank:** | Assistant Professor |
| **Department:** | Systems Engineering and Management | **Mil Rank or Civ Grade:** | Major |

## I. TEACHING AND STUDENT ACTIVITIES

**Courses Taught.**  Use one row per section.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Quarter Year | Course Number and Short Name | Credit Hours | No. of Sections | Course  Enrollment |
| SU 16 | STAT 687 – Math of Reliability | 4 | 1 | 4 |
| FA 16 | PDQ |  |  |  |
| WI 17 | SENG 585 – Reliability in System Design | 4 | 1 | 2 |
| SP 17 | RSCH 630 – Research Methods | 4 | 1 | 18 |
| SP 17 | SENG 685 – Reliability Engineering | 4 | 1 | 2 |
| WI 17 | LOGM 634 – Reliability, Maintainability, and Supportability | 4 | 1 | 15 |

**New Courses Developed.** Use one row per new section.

|  |  |  |  |
| --- | --- | --- | --- |
| Quarter Year | Course Name | Credit Hours | Notes |
|  |  |  |  |

**Notes Regarding New Courses Designed or Prepared, Changes to Existing Courses and Teaching Improvements.** Describe details of any new courses that were designed, any new courses you prepared this past year, any changes to existing courses and the magnitude of those changes (e.g. only changed some homework problems, updated a few lectures, made significant revisions to 25% of lectures, etc.) and any additional detail and impact of teaching improvement efforts. Use a separate paragraph per course.

**Students Currently Being Advised:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| PhD or MS | Student Rank | Student Name | Student’s Program | Graduation  Month Year | Faculty Role | Sponsored? |
| MS | SA | Abdulrahmen Alwabel | ENV/GEM | Sep 2017 | Thesis Advisor | Yes |
| MS | 1Lt | Daniel Timme | ENV/GSE | Mar 2018 | Thesis Advisor | Yes |
| PhD | Civ | Zach Little | ENS/GOR | Sep 2018 | Committee Member |  |

**Student Who have Graduated:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| PhD or MS | Student Rank | Student Name | Student’s Program | Graduation  Month Year | Faculty Role | Sponsored? |
| MS | 1Lt | Corey DeGroot | ENV/GEM | Mar 2017 | Thesis Advisor | Yes |
| MS | Civ | Diane Schultz | ENV/GCA | Mar 2017 | Thesis Advisor | Yes |
| MS | 1Lt | Nathan Greiner | ENV/GEM | Mar 2017 | Thesis Advisor | Yes |
| MS | Capt | Joseph Buyer | ENV/GEM | Mar 2017 | Committee Member |  |
| MS | Capt | Sean Murphy | ENV/GEM | Mar 2017 | Committee Member |  |
| MS | Capt | Brian Bentz | ENV/GSE | Mar 2017 | Committee Member |  |

**Notes Regarding Academic/Teaching Responsibilities.** Include details of other activities related to teaching and advising such as student awards, guest lectures, etc.

**II. RESEARCH ACTIVITY**

**Newly Funded Sponsored Projects.**  List new projects awarded since 1 July 2016. Reference ENR data. List in order of award date.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Project Title | Names of Investigators | Investigator Roles:  PI or Co-PI | Sponsor | Funded Amount | Inclusive Dates of Funding | Credit (%) per Investigator |
| AFIT Data Science Lab | K. Bauer  Lt. Col C. Smith  Maj J. Freels  B. Boehmke | Co-PI  Co-PI  Co-PI  Co-PI | ARCYBER | $250,000 | FY17 | 25%  25%  25%  25% |

**Continuing Sponsored Projects.** List projects awarded prior to 1 July 2016 whose funding continued beyond 1 July 2015.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Project Title | Names of Investigators | Investigator Roles:  PI or Co-PI | Sponsor | Funded Amount | Inclusive Dates of Funding | Credit (%) per Investigator |
| Science of Test Consortium | Ray Hill,  Jason Freels  Brian Stone  Doug Hodson | PI  Co-PI  Co-PI  Co-PI | DOT&E  DTMC | $800K | FY17 | 25%  25%  25%  25% |

**Research Proposals Submitted.** List proposals submitted since 1 July 2016. Reference ENR data. List in order of date submitted.

**Individuals Supported by Research Projects.** Include one row per contractor, faculty member, post-doc, etc.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Position | Employment Status | Amount or % Supported |
| Andrew McCarthy | AFIT Data Science Lab Intern | contractor | 100% |

**Other Research-Related Resources Obtained from External Sponsors.** Include equipment grants, donations received, etc.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Nature of Grant | Sponsor | Estimated Value | Award Date | Notes |
|  |  |  |  |  |

**III. SCHOLARSHIP**

**New Refereed Journal Publications In Print.**

List full bibliographic information such as authors, title, journal, volume (Vol.), number (No.), pages (pp.), month and year, as applicable. Articles accepted for publication but that have not yet appeared in printed form should not be listed here (see below). Articles submitted for publication but not yet accepted should not be included here (see below). Student co-authors should be designated with asterisks (\*).

* Boehmke B. C. and **Freels J. K.** (2016), *learningCurve: An Implementation of Crawford’s and Wright’s Learning Curve Production Functions,* Journal of Open Source Software, DOI: 10.21105/joss.00202.
* Vandawaker R. M., Jacques D. R., **Freels J. K.**, Ryan E., and Huscroft J. (2016), *“Health Monitoring Impact on Non-Repairable Component Supply Methods”,* Journal of Quality in Maintenance Engineering
* Boehmke B. C., Montgomery R. T., Ogden J. A., and **Freels J. K.** (2016), *kraljicMatrix: An R package for implementing the Kraljic Matrix to strategically analyze a firm’s purchasing portfolio,* Journal of Open Source Software, DOI: 10.21105/joss.00170.

**New Refereed Journal Publications To Appear.**

List as much full bibliographic information as available for articles that have been accepted for publication but have not yet appeared in printed form. Such articles should be denoted as “(to appear)”. Articles submitted for publication but not yet accepted should not be included here (see below). Student co-authors should be designated with asterisks (\*).

**Refereed Conference Papers (Full Paper Reviewed)**.

List full bibliographic information such as presenters, conference designation number, title, name of conference, location (city and state), and dates presented (days, month, year), as applicable. Include here only conference proceedings papers that were accepted based on a review of the entire paper and not only on its abstract. Student co-authors should be designated with asterisks (\*). The person presenting the paper at the conference should be denoted by #.

* Bentz, B. R., Colombi, J. M. and **Freels, J. K.** (2017), *Attritable Design Trades: Reliability and Cost Implications for Unmanned Aircraft,* Annual IEEE International Systems Conference – Montreal

**Refereed Conference Papers (Abstract Reviewed).**

List full bibliographic information such as presenters, conference designation number, title, name of conference, location (city and state), and dates presented (days, month, year), as applicable. Include here only conference proceedings papers that were accepted based only its abstract. Student co-authors should be designated with asterisks (\*). The person presenting the paper at the conference should be denoted by #.

* **Freels, J. K.** and Meeker, W. Q. (2017), *R Package SMRD – Statistical Methods for Reliability Data,* Quality and Productivity Research Conference - Storrs, CT
* **Freels, J. K.** and Meeker, W. Q. (2017), *Statistical Methods for Reliability Data,* Institute for Defense Analyses Test Science Workshop - Springfield, VA

**Invited Talks and Papers.**

List full bibliographic information such as presenters, conference designation number, title, name of conference, location (city and state), and dates presented (days, month, year), as applicable. Include here talks and presented papers that were not part of a formal conference proceedings. Student co-authors should be designated with asterisks (\*). The person presenting the talk should be denoted by #.

**Books and Chapters in Books.**

Provide full bibliographic information such as authors, title of work, publisher, chapter, page numbers, month and year.

**Patents.**

Include participants, title, month, year, and patent number.

**Patent Applications.**

Include participants, title, month, and year. Also include provisional patent applications.

**Invention Disclosures.** Include participants, title, month, year.

**Other Publications.**

* Boehmke B. C. and **Freels J. K**. (2016) learningCurve: An Implementation of Crawford's and Wright's Learning Curve Production Functions Comprehensive R Archive Network; Package version 1.0.0.
* Boehmke B. C., Montgomery R. T., Ogden J. A., and **Freels J. K.** (2016) kraljicMatrix: A Quantified Implementation of the Kraljic Matrix Comprehensive R Archive Network; Package version 1.0.0.

Provide all appropriate bibliographic information as applicable. Student co-authors should be designated with asterisks (\*).

**Publications in Review/Revision.** Include here papers that are submitted and under review (“under review”) as of 2015.06.30 and papers that are being revised (“in revision”). Papers that are not fully accepted formally (i.e., “tentatively accepted”) should be denoted as “under review” until they are fully accepted. Papers that are planned or are being written should not be included here. In each case the journal to which the paper was submitted must be listed. Student co-authors should be designated with asterisks (\*).

* Vandawaker R. M., Jacques D. R., **Freels J. K**., Ryan E., and Huscroft J. (2016) “Health Monitoring Impact on Non-Repairable Component Supply Methods” Journal of Quality in Maintenance Engineering, *under review*
* **J. K. Freels**, J. J. Pignatiello,R. L. Warr, and R. R. Hill (2017), “*Maximum Likelihood Estimation for the Poly Weibull Distribution*”, **Quality Engineering**, under review
* **J. K. Freels**, J. J. Pignatiello,R. L. Warr, and R. R. Hill (2017), “*Estimating Reliability Improvement in Highly Accelerated Life Testing*”, **Quality and Reliability Engineering International**, under review

**Publication History.** Here you will populate a table showing a summary at a glance of the number of your publications over the last five years. Only include in print or accepted papers and books here. Note that the numbers identified in the table must match what you have listed above for 2013-2014.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **2016-2017** | **2015-2016** | **2014-2015** | **2013-2014** | **2012-2013** |
| New Refereed Journal Publications In Print | **3** | **2** | **1** | **1** | **1** |
| New Refereed Journal Publications To Appear |  |  |  |  |  |
| Refereed Conference Papers (Full Paper Reviewed) | **1** |  |  |  |  |
| Refereed Conference Papers (Abstract Reviewed) | **2** |  |  |  |  |
| Books and Chapters in Books |  |  |  |  |  |
| Other Publications | **2** |  |  |  |  |

**IV. SERVICE ACTIVITIES**

**Service to the Department.**

* Equipment Custodian (ENV)

**Service to EN.**

**Service to AFIT.**

* Member of AFIT Quality Improvement Project (QIP) – External Subcommittee
* Champion Higher Learning Commission Assurance Argument (Criterion 4)

**Service to the Profession.**

**Outreach Activities.** Include activities supporting the USAF, DoD, other Federal agencies and civilian organizations.

* Named deputy director of OSD-funded Center of Excellence for Statistical Test and Analysis Techniques
* Requested by SAF/AQRE to advise the Armament Directorate (Eglin AFB, FL) on the application of a testing technique devised by Sandia Labs for use in a new munition development program. As result of these discussion the Armament Directorate was able to expand the applicability of the model to estimate munition reliability when test restrictions preclude the observation of failures and only degradation data is available.
* Requested to advise USSOUTHCOM on a proposed regression analysis to evaluate correlations between energy production and interstate conflict. As result of these interactions, USSOUTHCOM redirected the research focus.
* Requested by the Statistical Sciences Group at the Los Alamos National Lab to partner on research merging competing risk analysis with statistical flowgraph models.
* Advisor to the National Institute of Health to analyze panel data from experimental procedure to evaluate a novel treatment of Type I Diabetes using the injection of Islet cells in a patient’s pancreas. The data are transition times for patients achieve certain indicators or progress during the treatment.

**V. NEW PROFESSIONAL HONORS OR NOTABLE RECOGNITION.**

List only new awards or recognitions bestowed since 1 July 2015. Include month and year.

**Faculty Fellowships.**

**Professional Certifications.**

**Research and Teaching Awards.**

**VI. OTHER PERTINENT INFORMATION OR DEPARTMENT-SPECIFIC REPORTING REQUIREMENTS**

Include any other relevant information regarding teaching, research, service and outreach.

**VII. PROFESSIONAL PLANS AND GOALS FOR THE UPCOMING YEAR**

Include specific plans for 2016-2017 for each of the following.

**Teaching.** (e.g., courses that you are likely to teach or develop, specific efforts for improving your teaching or changing your courses, new modalities to be explored, etc.)

Finish development of the new R courses: Introductory R Programming & Advanced R Programming

**Research.** (e.g., plans for your PDQ, funding sources, proposals to specified funding agencies that are planned, manuscripts that you are currently writing and intended journals, etc.)

I expect funding to be awarded for the Science of Test Consortium research project. After this occurs, I will formally begin directing a multi-university research path to develop novel reliability estimation techniques.

**Service.**  (e.g., plans at the Department, EN, AFIT, Professional and other levels, etc.)

Develop the first markdown template for AFIT theses, dissertations, and reports

**Outreach.**

Publish the AFIT package for R to instantly generate templates for theses, dissertations and journal articles

Finish development of the first all-encompassing infrastructure for teaching resident and distance students simultaneously

**Other.**