**PURDUE UNIVERSITY**
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF A GRADUATE COURSE
(50000-69999 LEVEL)

**DEPARTMENT**  
Computer Science  

**EFFECTIVE SESSION**  
Fall 2013

**INSTRUCTIONS:** Please check the items below which describe the purpose of this request.

- [ ] 1. New course with supporting documents (complete proposal form)
- [ ] 2. Add existing course offered at another campus
- [ ] 3. Expiration of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit/term
- [ ] 7. Change in course attributes
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course requirements/restrictions
- [ ] 11. Change in semesters offered
- [ ] 12. Transfer from one department to another

**PROPOSED:**

- **Subject Abbreviation:** [ ]
- **Course Number:** [ ]
- **Title:** Computational Methods in Optimization
- **Credit:** [ ]
- **Credit Type:** [ ]
- **Schedule Type:** [ ]
- **Meeting Time Per Week:** [ ]
- **Meeting Days:** [ ]

**EXISTING:**

- **Subject Abbreviation:** [ ]
- **Course Number:** 52000
- **Title:** [ ]
- **Credit:** [ ]
- **Credit Type:** [ ]
- **Schedule Type:** [ ]
- **Meeting Time Per Week:** [ ]
- **Meeting Days:** [ ]

**TERMS OFFERED**

- [ ] Full
- [ ] Spring
- [ ] Summer

**CAMPUS(ES) INVOLVED**

- [ ] Calumet
- [ ] N. Central
- [ ] Cont Ed
- [ ] Tech Statewide
- [ ] Ft. Wayne
- [ ] W. Lafayette
- [ ] Indianapolis

**CREDIT ATTRIBUTES:**

- [ ] 1. Pass/No Pass Only
- [ ] 2. Satisfactory/Unsatisfactory Only
- [ ] 3. Repeatable
- [ ] 4. Credit By Examination
- [ ] 5. Special Fees
- [ ] 6. Registration Approval Type
- [ ] 7. Variable Title
- [ ] 8. Honors
- [ ] 9. Full Time Privilege
- [ ] 10. Off-Campus Experience

**COURSE DESCRIPTION:**

A treatment of numerical algorithms and software for optimization problems with a secondary emphasis on linear and nonlinear systems of equations: unconstrained and constrained optimization; line search methods; trust region methods; Quasi-Newton methods; linear programming; calculating derivatives; quadratic programming; global optimization, including simulated annealing.

Prerequisites: MA 35100 or 51100 and CS 15900 or 17700.

**OFFICE OF THE REGISTRAR**

(Grad Form 40G [Excel format]: Does not include the Graduate Council's required supporting document. See pdf version of Form 40G)
TO: Faculty of the College of Science

FROM: William J. Gorman, Assistant to the Head, Department of Computer Sciences

DATE: 02 March 2012

RE: CS 52000: Change of title and description

We ask approval of the following change of title, prerequisites, and description of CS 52000.

Current title, prerequisites, and description:

Computational Methods in Analysis

Prerequisites (in pre-Banner terms): MA 351 or 511 and CS 154 or 180 or equivalent.

A treatment of numerical algorithms for solving classical problems in real analysis with primary emphasis on linear and nonlinear systems of equations and on optimization problems; the writing, testing, and comparison of numerical software for solving such problems; a discussion of the characteristics of quality software for implementing these algorithms. Typically offered in spring semesters.

Proposed title, prerequisites, and description:

Computational Methods in Optimization

Prerequisites: MA 35100 or 51100 and CS 15900 or 17700.

A treatment of numerical algorithms and software for optimization problems with a secondary emphasis on linear and nonlinear systems of equations: unconstrained and constrained optimization; line search methods; trust region methods; Quasi-Newton methods; linear programming; calculating derivatives; quadratic programming; global optimization, including simulated annealing.

Rationale:

The present description dates from 1979, and the course has not been offered since the spring of 2004. The intent of the new description is to update the course and reduce overlap with CS 51500. The prerequisites are essentially unchanged: linear algebra and introductory computer programming.

<<< CONTINUED >>>
Faculty who might teach the course:

D. F. Gleich, A. Y. Grama, A. Pothen, and R. D. Skeel

Textbooks:


Course Outline:

1 week unconstrained optimization;
1.5 weeks line search methods;
1.5 weeks trust region methods;
2 weeks QuasiNewton methods;
1 week calculating derivatives;
2 weeks constrained optimization;
2 weeks linear programming;
2 weeks quadratic programming;
1 week global optimization, including simulated annealing.
1 week exams and possible holiday

Grade: based on exams and assignment
To: Nancy Leinbach, Fort Wayne Campus
From: Lauren Duncan, Catalog Coordinator
Date: January 28, 2013
Subject: Modifications to the Course Catalog

West Lafayette has requested modifications to CS 52000 that is offered at your campus. Please review this request. If your campus agrees for the change to be effective at your campus, please sign the form 40 and return to me at your earliest convenience. For example, if a campus is requesting a change in course title and your campus signs the Form 40, then the course title will be updated at your campus also.

If you do not concur with the request to be effective at your campus, please sign below indicating the request is not allowable.

________________________________________________________________________
Name & Title Date

Please be advised that no action can be taken on processing the request until all signatures are obtained from each campus. Any assistance you can render in expediting this request will be appreciated.

Attachment