1. Catalog Description of the Course. [Follow accepted catalog format.]

Prefix COMP  Course# 590  Title ADVANCED TOPICS IN COMPUTER SCIENCE  Units (3)
3 hours Lecture per week

- Prerequisites
- Corequisites none

Description Selected advanced topics in Computer Science.

Graded
- Gen Ed
- CR/NC
- Repeatable for up to 9 units

Lab Fee Required
- A - F
- Optional (Student’s choice)

Total Completions Allowed
- Multiple Enrollment in same semester

2. Mode of Instruction.

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
<th>Graded Component</th>
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<tbody>
<tr>
<td>Seminar</td>
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<td>Laboratory</td>
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<td>Activity</td>
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3. Justification and Learning Objectives for the Course. (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) [Use as much space as necessary]

Justification: This course is an elective course for teaching graduate students in computer science.

Learning Objectives:
Upon completion of this course students will be able to:

(Press enter for the next bulleted item)

- conduct further research in the selected topic
- apply knowledge from the studies in researching related areas
- apply the learned methodologies in software design, development and engineering
- apply the learned skills in the professional career

4. Is this a General Education Course  YES □  NO □

If Yes, indicate GE category and attach GE Criteria Form:

A (English Language, Communication, Critical Thinking)
- A-1 Oral Communication
- A-2 English Writing
- A-3 Critical Thinking

B (Mathematics, Sciences & Technology)
- B-1 Physical Sciences
- B-2 Life Sciences – Biology
- B-3 Mathematics – Mathematics and Applications
- B-4 Computers and Information Technology

C (Fine Arts, Literature, Languages & Cultures)
- C-1 Art
- C-2 Literature Courses
5. **Course Content in Outline Form.** [Be as brief as possible, but use as much space as necessary]
   (Press enter for the next bulleted item)
   
   - The content depends on the selected topic.
   - For example, for a course on Evolutionary Computing it could be:
     - Darwin's evolution theory
     - Principles of genetics
     - Problem solving as a search task
     - Hill climbing techniques and their relation to the evolution theory
     - Standard evolutionary algorithm
     - Crossover+Mutation+Selection=Evolution
     - Evolution strategies
     - Evolutionary programming
     - Genetic programming
     - Selected applications
   
   Does this course overlap a course offered in your academic program?  YES ☐ NO ☒
   If YES, what course(s) and provide a justification of the overlap?
   
   Does this course overlap a course offered in another academic area?  YES ☐ NO ☒
   If YES, what course(s) and provide a justification of the overlap?
   Signature of Academic Chair of the other academic area is required on the consultation sheet below.

6. **Cross-listed Courses (Please fill out separate form for each PREFIX)**
   List Cross-listed Courses
   
   Signature of Academic Chair(s) of the other academic area(s) is required on the consultation sheet below
   
   Department responsible for staffing:
   
7. **References.** [Provide 3 - 5 references on which this course is based and/or support it.]
   (Press enter for the next number)
   
   The bibliography depends on the selected topic.
   For example, for the course on Evolutionary Computing the following books could be used:
   "Introduction to Evolutionary Computing" by A.E. Eiben, J.E. Smith, Springer 2003
   "Genetic Algorithms in Search, Optimization, and Machine Learning" by David E. Goldberg, Addison-Wesley, 1989
   "Genetic Algorithms + Data Structures = Evolution Programs" by Zbigniew Michalewicz, Springer, 1998
   "Practical Genetic Algorithms" by Randy L. Haupt, Sue Ellen Haupt, Wiley, 2004

8. **List Faculty Qualified to Teach This Course.**
Computer Science Faculty

   a. Projected semesters to be offered: Fall ☑  Spring ☑  Summer ☑

10. New Resources Required. YES ☐  NO ☑
   If YES, list the resources needed and obtain signatures from the appropriate programs/units on the consultation sheet below.
   a. Computer (data processing), audio visual, broadcasting needs, other equipment)
   b. Library needs
   c. Facility/space needs

11. Will this new course alter any degree, credential, certificate, or minor in your program? YES ☐  NO ☑
   If YES attach a program modification form for all programs affected.

AJ Bieszczad  
Proposer of Course  Date
## Approvals

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<tr>
<th>Position</th>
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<td>Program Chair</td>
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<td>General Education Committee Chair</td>
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<td>Curriculum Committee Chair</td>
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