Computational Science: Appointment, Promotion, and Tenure Documentation

The College at Brockport
Department of Computational Science
SUNY College at Brockport
GUIDELINES FOR TENURE AND PROMOTION

Preamble
These guidelines are submitted by the Chair of Computational Science (CPS), in agreement with all CPS faculty members and in consultation with well-known experts at other institutions in the field of computational science and engineering. These guidelines also represent revisions based on input from the Dean and the Vice President for Academic Affairs.

The Computational Science program is a new endeavor at Brockport. It is expected that this document will be revised periodically by the Department with the approval of the Dean. It is also important to recognize that this document is establishing minima and not sufficient conditions for tenure and promotions.

A. Nature of the Discipline
As much of an interdisciplinary program as CPS is, the field of computational science is a discipline of its own due to: 1) the amount of knowledge involved in its presentation to students, 2) the number of journals and conferences devoted to this topic, and 3) the work and service involved for further recognition, establishment, and success of the field at both local and national levels.

Computational science is an emerging field at educational institutions. However, the research component of this field is very strong and dynamic, therefore being the driver behind curriculum updates and student preparation for the job market. New computational tools arrive in industrial and scientific job markets almost every day. Integration of faculty research work and interests into curriculum is needed to properly represent a field that combines science, technology and education so intimately. Faculty involvement in computational research is absolutely critical for updating their knowledge in support of the departmental curriculum. Therefore, scholarship is a very important component in evaluating faculty performance for tenure and promotions. The target profile that can best represent a benchmark for personnel decisions is 50/40/10 (teaching/scholarship/service).

Being a leading player in undergraduate CPS education for historical reasons, our obligation is to continue this leadership at the national level. Our graduate program has also become one of the strongest at Brockport. To continue our leadership, CPS faculty needs to be in close contact with colleagues elsewhere,
especially those in the high performance computing research and those in the graduate-level computational science and engineering programs. Outside review of our program and that of our faculty performance will need to be included in tenure and promotion decisions.

B. Procedure for Academic Personnel Decisions

Academic personnel decisions include term renewals, tenure, and promotions in rank. An application by the candidate is first made to the departmental office. The department chair will appoint an APT review committee out of tenured faculty members and outside experts. In case there are no tenured CPS faculty members to construct the evaluation committee, the department chair could seek an outside panel made up of members of other departments at Brockport, or similar departments at other institutions. Academic credentials and performance should only be reviewed by those with similar knowledge and experience. The responsibility of the APT committee is to evaluate the applicant. This involves not only a judgement, but also a clear statement of a supporting rationale in the committee's report to the department. The department needs to ensure that committee members have reviewed the application in advance of consideration and voting. A decision will be made by the chair upon his/her direct evaluation and recommendations of the APT committee and the departmental faculty. A letter will be sent from the department chair to the Dean of School of Letters and Science. The applicant should be notified of the decision at each point in the process, from the APT committee to the College President, and will be allowed to stop the consideration process at any point prior to the President's decision.

As part of the application, the candidate can submit a two-page letter addressed to the APT committee, the department chair, or the President of the College to provide highlights of teaching, research, and service from the perspective of the candidate. This letter will not be a substitute for anything that is already in the candidate's file, but to signal to the reader what the candidate considers to be the most salient features of his or her work. Annual reports should also be submitted along with the application.

C. Guidelines for Renewal of Term Appointment

When a faculty member applies for the renewal of term appointment, the period of evaluation should include all activities from the beginning of the term appointment up to the time of application. In this application, faculty member's contributions to three areas of scholarship, teaching, and service in the program need to be listed. Previously submitted annual reports will be consulted. There must be evidence that candidate's scholarship, teaching, and service activities are in support of the program’s future directions. There must be evidence that candidate’s overall activities are representative of CPS goals as a discipline and a scientific unit. Furthermore, there must be evidence that the candidate will in all
likelihood be able to satisfy the criteria for tenure within the remaining available time.

D. Guidelines for Continuing Appointment (Tenure)
The period of evaluation should include all activities up to the time of evaluation, Brockport and elsewhere. However, the activities since the time of appointment will be given significant consideration. The candidate is expected to make substantial contributions in three main areas of college evaluation groups. Evaluation of candidate’s contribution to these areas will be done by the department chair in conjunction with an APT committee appointed by him.

D.1. Scholarship
1. A strong record of research accomplishments evidenced by at least 4 peer-reviewed publications (in print or accepted for publication). At least half of publications have to be computational and simulation journals such as J. Computational Physics, Computational Polymer Science, High Performance Computing, Parallel Computing, Computers and Mathematics, Computer Physics Communications, Applied Math Letters, and International Journal of HPC Applications. Articles in refereed web-based e-journals will receive the same credit as paper-based ones. At least half of the publications must be written during candidate’s term appointments at Brockport. However, a person considered for a tenured position, as a new hire, will be judged on his/her work prior to Brockport. One or a combination of the following activities, altogether, can receive credit to be considered as a maximum of one (1) peer-reviewed publication mentioned above:
   - A successful external grant (research or equipment donation) to which the candidate is a PI, or co-PI.
   - A research and/or consulting activity, supported by outside funding, during the academic or summer months
   - A publication of a full paper in the proceedings of a referred conference
   - A significant, innovative, and widely available software and/or hardware that has been subject to peer review
   - Publication of a book chapter, a textbook, or documentation of a hardware or software produced by the faculty member alone or as part of a team

D.2. Teaching
The candidate is expected to have demonstrated his/her ability as a competent and successful teacher. Since computational science involves topics in computer science, applied mathematics, visualization, and application sciences, an ability to teach a wide range of different courses at the both lower and upper levels is expected. A thorough review of a teaching portfolio conducted as outlined:
• Peer Evaluation: Observe class sessions on several occasions by peers in CPS and other departments. The candidate as well as the department chair could arrange this. A written report must be included in the portfolio.
• Student Evaluation: evaluation data such as IAS and IDEA, solicited and unsolicited testimonials with current and former students. The student evaluations of the faculty need to be returned to the chair along with the faculty annual performance reports.
• Material Evaluation: Examine all course-related materials: course syllabi and first-day handouts, class handout material, grading techniques, exams and quizzes.
• Self-Evaluation: A report from the candidate about his teaching philosophy and progress made based on student and peer feedback. This self-evaluation could also address issues listed in the teaching criteria below.

D.2.1 Criteria for Teaching Evaluation
1. Ability in subject matter and use of expertise in and outside of the classroom.
2. Effectiveness of materials used in courses.
3. Appropriateness and consistency of material covered in regard to registered outline.
4. Clarity of goals and objectives and how successfully these are introduced to students.
5. Clarity of requirements expected from students
6. Consistency between grading techniques and learning expectation.
7. Relevance of exams, quizzes, homework assignments, and projects to class materials.
8. Student feedback and perception about amount of work required and learned.
9. Student feedback on instructor’s overall contribution.
10. Instructor’s interest in student’s learning and progress.
11. Instructor’s level of enthusiasm for course and interaction with students.
12. Instructor’s ability to foster an academic environment encouraging students to think analytically and become creative.
13. Use of computer hardware, software, and computational problems in the field.
14. Ability to instill in students the desire to continue learning and to provide guidance.
15. Instructor’s ability to retain students.
16. Availability and interest of instructor to work with students outside of class.
17. Ability & interest with programming assistance to students in person or electronically.
18. Availability of class material on the Internet or other forms of electronic distribution.
19. Number of educational publications or research-curriculum publications.
20. Evidence of effort to continue to improve teaching.
21. Evidence of awards and degree of recognition by college or university on teaching.
22. Contributions to curriculum

**D.3. Service**
The candidate is expected to participate in assigned departmental duties assigned by the department chair. These include curriculum development, course registrations, software and hardware installations, system administration of high performance computing and visualization systems, evaluation of department-wide software and hardware, undergraduate and graduate advisement, and finally recruitment and retention of students.

Measures of departmental service will be: time spent on an activity, number of students recruited to CPS program by the candidate, number of grad and undergraduate students advised, number of recruitment and advisement sessions participated, number of internships advised and mentored, and how smooth departmental hardware and software operates for tasks assigned by the chair. These services may vary from year to year and will be assigned to faculty by the chair depending on candidate’s overall load.

An important service is the academic advisement of both graduate and undergraduate students. The students in CPS require a case-by-case advice because of the scope of the program. Every student is expected to select an area of application to test acquired computational skills. CPS students are exposed to 4 different areas of knowledge: computer science, math, computational techniques, and application science. The CPS faculty will be approached by students for help on all these topics, as this has been our experience from the student body we have had so far. This creates an extra burden on faculty for their preparation to meet such a demand. For a new and a comprehensive program as CPS, this activity needs to be accommodated by faculty as it affects the student retention and programmatic growth. Graduate students also require constant advisement due to the nature of their projects. Faculty’s active involvement in computational research is needed to provide graduate students guidance and advice needed. The measurement of faculty performance on academic advice to both undergraduate and graduate students is very important. A record needs to be maintained by the faculty member in terms of the scope of advice and the number of students advised. The academic advisement should be viewed closely with faculty members’ teaching and research load as preparation for a healthy advisement requires additional work for CPS faculty in the area of scholarship and course knowledge. Students taking non-CPS courses such as PHS 201-202-302, CSC 203-205-406, MTH 203-281-481-424 often consult our faculty for help. A survey of CPS students will be conducted by the department on an annual base.
to collect feedback on the level of advisement received from faculty. Although faculty member’s own statement to describe his/her advisement service will be adequate, supporting evidence in terms of email and other communications with advisees can also be submitted. In a field as diverse as CPS, the number of advisees is not necessarily a measure of the activity. To advise even a handful of graduate and undergraduate students, faculty members may have to cover a wide range of issues and different knowledge bases to be able to help.

Another aspect of important service is active memberships in societies of high performance computing and simulation, industrial and applied math, computer science, visualization, and applied sciences. Any service in curriculum development of computational science and engineering programs in the nation's K-12 and higher education system will receive due credit. Standardization efforts in high performance computing hardware and software environments, dissemination of software libraries and application packages to a user community is among highly respected services in this profession. Since this is a new program, service to the department and profession is very important and should involve faculty at all levels, including those with continuing appointments. The highest priority of departmental service is maintenance of departmental computers, curriculum development, student recruitment and advisement.

E. Guidelines for Promotion to Associate Professor
The period of evaluation should include all activities up to the time of the evaluation. Candidates currently at Brockport are expected to make substantial contributions since coming to Brockport. The guidelines for promotion to the rank of associate professor includes requirements for tenure in this program plus evidence of additional contributions of leadership in research, teaching, and service as outlined below.

E.1. Scholarship
At least 4 referred journal publications, two of which must demonstrate scholarship beyond doctoral dissertation in new areas of investigation. Two factors considered for promotion are evidence of how deep and wide the candidate has gone in research; i.e., how specialized the candidate has become in own field (number of papers to whom he/she is the first author) and what other areas of research he/she tackled. A new or a different computational approach to a previously studied scientific area can be viewed as a new area of investigation. Implementation of previously studied computational approach to a different scientific problem can also be seen as a new area of investigation. New hires to be considered for this rank (tenured position at Associate Professor level) might be subject to 5 publications. However, candidates whose work may have involved propriety information in industrial settings or national labs will receive due
consideration for work not publishable before because of project rules. Evidence of such work might have to be demonstrated. Other scholarly activities, as listed for tenure, can receive credit towards meeting the requirement of one referred journal paper (up to one paper).

E.2. Teaching
In addition to the criteria and review process of tenure teaching requirements, the candidate is expected to demonstrate a diverse portfolio as well as mastery of subject areas in this portfolio. The candidate is expected to have demonstrated his/her ability as a competent, successful teacher who can teach any subject in the area of computational techniques, tools, parallel computing, visualization, introductory computer science, and applied mathematics. The candidate is also expected to teach graduate level courses.

E.3. Service
In addition to service expectations of tenure, the candidate is expected to assume leadership roles on departmental activities. The candidate should be able to represent the department at the college level. Service to college could include faculty senate and technology counsel. Service to profession includes program or general chairmanship of a conference in the field and active participation in national discussions of computational science education and high performance computing.

F. Guidelines for Promotion to Professor
The period of evaluation should include all activities up to the time of evaluation, Brockport and otherwise. However, the activities since the time of appointment will be given significant consideration if the candidate is already at Brockport prior to applying for promotion.

F.1. Scholarship
A strong record of extensive scholarship and significant contribution to the discipline as evidenced by at least 8 peer-reviewed publications (in print or accepted). At least half of these publications have to be in computational, simulation or high performance computing journals and at least half of these publications need to be during candidate's appointment at Brockport if the initial appointment was at the level of Associate or Assistant Professor. Other scholarly activities that can receive credit towards (up to 2) publications are: successful grants, publication of a full paper at referred conference, significant and innovative software and hardware products and publication of textbooks and editing special issue of a journal. A high quality of scholarship must be evident in papers and scholarly activities as a demonstration of maturity and mastery in subject area.
F.2. Teaching
In addition to the expectations required for an Associate Professor, the candidate is expected to have demonstrated a continuing effort to 1) improve and update course materials, 2) show leadership through introduction of new courses and curriculum, 3) examine integration of his/her research work and software into computational science curriculum, and 4) maintain a highly effective teaching profile as indexed by the indicators employed for tenure consideration.

F.3. Service
The candidate is expected to have undertaken a leadership role at departmental, college levels as well as service to professional community of high performance computing, and computational science and engineering. A substantial level of recruitment and student advisement is expected of the candidate. Leadership or active role in undergraduate or graduate curriculum development must have been demonstrated.