Requirements and Guidelines for Applications to Host ACA Summer Courses

Document Prepared September 2010 by the ACA Continuing Education Committee

The ACA Summer Courses are awarded to a specific site for a time period of typically four years. Traditionally two Courses are offered each summer, one on small molecule crystallography and the other on macromolecular crystallography, although applications for other topics are also open for consideration. For an applicant to organize/host such a Summer Course certain *requirements* must be met, while one should also strive to meet other *suggested guidelines* although for the latter there is more flexibility depending on circumstances. The Courses are held every year in the summer and should run for 10 to 12 days, with the dates not conflicting with any ACA or IUCr meetings. Applicants are encouraged to also check the ACA homepage for any late breaking changes or additional requirements beyond those provided here prior to proposal submission. Applications should clearly indicate how each of the issues below is to be addressed.

Letter of Intent

While not required, it is strongly recommended that interested applicants submit an informal Letter of Intent. The main purposes of the Letter of Intent are to initiate dialogue with the Continuing Education Committee (CEC) and to facilitate preparation of the Proposal. The CEC will respond to the Letter of Intent, informing the applicant of potential shortcomings and additional requirements. This letter should contain as much information as possible, but at least the following:

1. Title, date and place of proposed activity
2. Names and contact information of the organizers
3. A brief description of the event and a statement of how this benefits the crystallographic community
4. A rough estimate of the expected number of participants
5. A rough outline of a budget showing projected income and expenses

The Letter of Intent should be submitted to ACA office in Buffalo no later than by the annual ACA meeting that precedes the Proposal deadline.

Proposal for Summer Courses

The Proposal should consist of the following

1. Title, date and place of proposed activity
2. Names and contact information of the organizers
3. A *ca*. 3000 word abstract providing a detailed description of the event and a statement of how this benefits the crystallographic community
4. A detailed description of what is to be done and who beyond the organizers will be involved. This should include a description how the Requirements and Guidelines outlined below are incorporated.
5. An estimate of the expected number of participants
6. A timetable
7. A detailed budget showing projected income and expenses, including a list of all sponsors, the extent of scholarships, *etc*. Note that commitments to funds from outside donors must be supported in writing by the donors.
8. If the proposal is accepted for sponsorship by the ACA, organizers will provide information for publication in the ACA Newsletter and on the web site.

Deadlines

Proposals for ACA supported Summer Courses should be submitted to the ACA office in Buffalo no later than January 15th of the year prior to the starting year of the proposed four-year period (*e.g.* for a 2012 to 2016 Summer Course block, the application should be submitted by January 15th 2011. This deadline will also be advertized on the ACA web site. Proposals will be sent to the Continuing Education Committee for review. The Committee will submit their recommendation to ACA Council within 8 weeks. Council will notify the organizers.

Requirements:

1) The hosting organization needs to be able to accommodate at least 20 students, should that number or more apply. To keep the Course effective, the class should be comprised of 10 to 50 students, as classes of more than 50 students do not allow for intensive

training and fewer than 10 students per class is not cost effective. If housing for the students cannot be provided on-site, daily transportation must be provided.

2) The Courses must have both a theoretical and practical, hands-on character. A healthy mix between lectures, demonstrations and hands-on training/exercises is required. For example 35% lectures, 15% demonstrations, and 50% hands-on training/exercises would be fine, but other ratios can be acceptable as well. These numbers are averaged over the duration of the Course (ideally, a theory lecture should precede any practical session dealing with application of that theory).

3) Students must have access to adequate computing facilities and diffraction equipment in order to allow for effective hands-on training. For the duration of the Course, the following equipment must be accessible to both Course students and faculty:

- At least one **computer** for every two students (ideally one for each).
- For small molecule Courses, at least one operational **single crystal diffractometer** equipped with an area detector and low-temperature device, and at least one operational **powder diffractometer.**
- For macromolecule Courses, access to a synchrotron and/or local access to several operational in-house **protein crystallography data collection instruments (*e.g.* high-flux source, focusing optics, area detectors, low temperature devices, *etc*.)**

4) Every student should personally mount and, when appropriate, grow, cryoprotect and freeze a crystal. Each student should collect and process data, ideally from that crystal; for the small molecule Course, each student should be involved in performing data reduction and absorption corrections, solve and refine at least one structure, and run a powder sample. For the small molecule Course, students should be encouraged to bring their own crystals. For the macromolecule Course, students should be encouraged to bring their own samples for crystallization setups and crystallization should be included in the lectures and lab.

5) At the end of the Course, every student needs to fill out an evaluation form pointing out and ranking Course strengths, weaknesses, and whether or not the Course met their needs/expectations. The form should also include a field for suggested improvements. All forms should be collected and turned in promptly to the ACA office in Buffalo with copies to the ACA's Continuing Education Standing Committee.

6) A thorough program plan with a reasonably detailed budget must be provided that includes organizers and host organization, tentative list of instructors, tentative syllabus, scientific and housing facilities, expected costs, expected income raised from student fees, amount requested from the ACA, and amount expected to be raised through donations, *etc.*

7) The organizers of the Course must submit a written report to the ACA Standing Committee on Continuing Education (with a copy to the Buffalo Office) within 60 days of Course completion. This report should contain a summary of the Course, a list of student attendees with their home institutions, e-mail addresses, status (*i.e.* undergrad, grad student, postdoc, *etc*.), and which students, if any, received stipends. The report should also contain a breakdown of actual expenses by category and a list of participating faculty members present during the Course. The report may also contain items of special mention (*i.e.* reflections on potential improvements, exceptionally good results, *etc*.) as well as a description of any field trips or coordinated social activities.

Guidelines:

1) It is desirable to have a large faculty. Well known, experienced crystallographers from all over the country and possibly abroad should be recruited as faculty. It may be a good idea to invite some young faculty members who are actually doing crystallography in their everyday lives, especially for the hands-on components. The Summer Course is also a place for the students to network; being exposed to a large number of teachers is helpful in this respect.

2) There should be some time for socializing between the students and also between students and faculty. Common lunchtime could be an opportunity, or some evenings ending not later than 9:00 p.m., perhaps with a general, open discussion period following. A picnic on the Sunday is also a good opportunity for networking. The contacts made at the Summer Course can be as important as the knowledge taught.

3) On the last day of the Summer Course, it is desirable that every student would present a brief (*e.g.* five minutes) report to all students and faculty about his or her endeavors during the Course period. This enables the students to reflect upon the Summer Course productively and allows the faculty to get an overview of the whole class. In the last years, this has been done successfully at the small molecule Courses organized by Charles Lake and any future Summer Course organizer should consider keeping the final student reports as an integral part of the curriculum.

4) Lecture hall, computing facilities and crystallization/diffraction laboratory should be located near to one another. The need to travel by car or bus to get from the diffractometer room to the lecture hall or computing facility would be disruptive (synchrotrons usually being an exception unless remote data collection is used). Students should ideally be housed on or near campus, so that they can walk to all required locations.

5) Ideally, faculty housing would be nearby too. Besides knowledge (theory classes) and skills (practical training), student-faculty contact is an important aspect of the ACA Summer Courses. This kind of networking is greatly facilitated if students and faculty live on site for the whole Summer Course.

6) Networking between the students is important and a diverse student body is desirable. Full scholarships for deserving students as introduced by Charles Lake are an effective way to allow a diverse group of students to come together for the annual ACA Summer Courses. This is a great and highly effective way of supporting students from South- and

Central-American and also not-so-well-off domestic universities. The organizer of an ACA Summer Course should try to allow as many students as possible to receive partial or full scholarships.

7) While the student attendees certainly gain valuable training, the Course could benefit a significantly larger group of ACA members and others if the lecture materials were also made available to the general public. Placing all lecture presentations on a website is therefore highly desirable. Andy Howard has done this for the macromolecule Course in the past, and in some years those lectures were also videotaped. The Course organizer(s) should consider these or other options that could help educate a larger audience.