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Preface

The guide describes the Tuning process from the inception of a grant through the application of the final results by faculty participants returning to their home departments. As a result of that comprehensive scope, some sections may not be of interest to all participants in the process. IEBC believes that it is important, however, that those involved at each stage of the process be party to all the procedures that the guide describes.

The guide grows from the experience of The Institute for Evidence-Based Change (IEBC) in observing, facilitating, and debriefing groups who have engaged in Tuning initiatives. We offer it as a living document, one that will evolve as faculty in coming initiatives develop new strategies for working through the process of Tuning.

As we wrote, our goal was to have practitioners review the guide so that it describes the process clearly while allowing for the variation of form that different Tuning initiatives can take. We wish to thank all those who have participated in that review as well as all those who have contributed to the completion of this guide in other ways.

From the original Tuning pilot states, we are grateful to Teddi Safman, Bill Evenson, Norm Jones, Dan McInerney, and Janice Gygi in Utah; Leslie Mercer and Cheryl Maplethorpe in Minnesota; and Marianne Wokeck and Keith Anliker in Indiana.

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Chapter 1: Introduction to Tuning

Overview

Five Steps to Tuning

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Overview

Tuning USA is a faculty-led initiative to define what students must know and be able to demonstrate after completing a degree in a specific field. Its methodology is based on the Bologna Process being implemented in Europe to increase the transparency of degrees.

Tuning involves creating a framework that establishes clear learning expectations for students in each subject area and sets forth clear responsibilities for institutions to invite all stakeholders (faculty, students, recent graduates, and employers) to have input into the process. It is critically important, however, that all programs being tuned retain their academic autonomy.

The objective is to better establish the quality and relevance of degrees in various academic disciplines. Lumina Foundation, the initiator and current co-funder of Tuning USA, enumerates the following benefits arising from the Tuning process:

| Aligning:       | The roles of higher education institutions;          |
| Facilitating:   | Retention, especially among students from underserved groups, by creating clear expectations for and pathways to degree completion; |
| Simplifying:    | The process for students transferring credits between institutions; |
| Increasing:     | Higher education’s responsiveness to changes in knowledge and its application; |
| Emphasizing:    | Lifelong learning and important-but-often undervalued transferable skills; |
| Ensuring:       | That the applied skills associated with coursework align with societal needs and workforce demands. |

What is Tuning

Tuning is a faculty-driven process to articulate what a student knows and is able to do in a given discipline at the point of degree. Typically, faculty from four-year and two-year colleges and universities within a state meet by discipline to work through the tuning process. Both public and private institutions within a state/region are included in the Tuning process, though participation is voluntary. Faculty members meet in their respective discipline groups to generate competencies and outcomes for their respective degrees.

What makes Tuning unique is that it intentionally includes collaboration among faculty from different institutions and institutional types across a state, professional organization, and/or groups of states. It breaks down silos and brings faculty together to talk about their discipline across many lines. As noted by faculty: “The Tuning process has brought to the surface our common ground.”

Whether a Tuning work group begins the process by determining these outcomes at the point of a master’s degree in the discipline and works backward to the associate’s degree or begins with the associate’s and works through the bachelor’s and master’s level, it makes no difference. The outcomes from either methodology result in a list of competencies that reflect a student’s skill sets and background knowledge at the point of degree.

The important thing is that faculty, as experts in the field, determine what the degrees represent.

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1 The Minnesota Office of Higher Education Final Report; Grant Number 6142 Tuning Initiative, p. 21.
Reference Points, Not Standardization

Tuning does not attempt to standardize curricula. As has been noted already, Tuning is a faculty-driven process that identifies an explicit core of learning outcomes within shared, discipline-specific competency areas. To that end, Tuning produces clear standards by which student success is defined, but it does not standardize. The core outcomes are not an attempt to standardize curricula or to create some sort of statewide or national curriculum.

In short, Tuning does not focus on curricula. The faculty experts that comprise the work groups may discuss their individual curricula as a means of making explicit shared competencies and outcomes, but not as a means of establishing a common curriculum. Individual faculty participants are responsible for assuring that they are attentive to those competencies and outcomes in their own curricula.

For example, English departments will agree that sensitivity to metaphor and other types of figurative language are an important point of learning in the discipline. One department might attend to this competency by making it an area of emphasis in literature survey classes. Another department might choose to offer a class in literary analysis that spends time on the topic. The area of learning is common between the departments, but the means by which they enable students to develop conversancy with it are particular to each instance.

Notice, too, in the example that the area of learning is fundamental to the discipline. English classes nationwide examine figurative language. Tuning does not endeavor to stipulate all the competencies and outcomes in a discipline. Tuning seeks to identify the core competencies and outcomes of the discipline. In other words, Tuning gives faculty experts a chance to make explicit what in practice is already shared amongst them. Individual departments are made unique by how they teach those common competencies (as above) or by what they hold as important in addition to those common competencies.

Thus, identifying competencies and their subsequent outcomes does not limit the faculty’s ability to approach the material as they see fit within their own institutions and classrooms. It only establishes what students should know and be able to do at the point of graduation in the discipline.
The intent of Tuning is to:

**Clarify** and create transparency in communications among the public, students, potential employers, and other educational stakeholders about what a student knows and is able to do at the point of degree;

**Create** clear educational pathways so that learners know what classes they need to take to achieve an end. For underrepresented student groups with little experience in higher education, clearer pathways should lead to better retention and completion rates;

**Make** the process of articulating coursework across systems simpler and provide transfer students more certainty that course work will count at the transfer institution;

**Ensure** the match between skills acquired and skills needed in the work place.

Given this intent, Tuning establishes clear standards for student performance to assure that the quality of the degrees conferred is substantive.

Five Steps to Tuning

Tuning consists of five processes by which Tuning work groups identify what students earning a given degree in a given discipline know and can do. The process grows from the assumption that faculty, those who know a discipline best, should be the party responsible for determining the discipline’s core. Because other stakeholders have an interest in the discipline, the work groups solicit feedback from students seeking to become experts in that discipline and from potential employers who will hire those students. The work groups document their thinking and revise it based on that feedback.

1. Define The discipline core;
2. Map Career pathways;
3. Consult Stakeholders;
4. Hone Core competencies and learning outcomes;
5. Draft Degree specifications.

Figure 1.1
In **Step One** Tuning work groups identify the core competencies for the different degree levels (A.A./A.S., B.A./B.S., M.A./M.S./M.B.A, etc.) and the learning outcomes that derive from those competencies. These competency and learning outcome statements make explicit what students will learn and should know and be able to do upon satisfactory completion of a given degree.

In **Step Two** Tuning work groups determine what career and employment tracks their graduates follow upon completion of the degree. Mapping career pathways allows faculty to 1) identify other stakeholders and 2) provide students with career pathways information.

**Step Three** provides Tuning work groups with feedback and input on their competency and learning outcome statements. This step enables Tuning work groups to evaluate the relevancy of their current discipline configuration and to adapt to changes in practices, making the degree programs more responsive while maintaining a faculty-directed determination of the discipline’s core.

In **Step Four** Tuning work groups refine their competency and learning outcome statements in light of stakeholder feedback and subsequent work group discussions. The completed statements need to distinguish the different degree levels (A.A./A.S., B.A./B.S., M.A./M.S./M.B.A, etc.) from one another. The resulting revised set of statements is the foundation on which the degree specifications will be built.

**Step Five** differs from the other four because it sends Tuning group participants back to their departments to write degree specifications for each degree offered. These specifications constitute the point of contact between the Tuning process and departments, and they are the simplest form of implementing the results of the Tuning process.

*(See Chapter 4 for a complete discussion of the five steps.)*

As a process, Tuning encourages work groups to develop explicit statements of a discipline’s core areas of learning by engaging in a recursive sequence of definition and revision based on increased awareness of the needs of other stakeholders. It should be noted that the Tuning process endeavors to define the core of a discipline. That word, core, is important, because it does not suggest that Tuning aims at defining the totality of what will be taught in a given discipline. The process tries to define what various faculty and curricula have in common as they undertake to educate students in their own distinctive ways.

The initial results of this process should be a body of explicit statements that make clear to students beginning or in the midst of their studies exactly what they are expected to learn and that articulate for graduates what their degrees have given them in terms of knowledge and skills, as well as career pathways opened to them by the degree. Fundamentally this process is about students gaining greater understanding of what it is they are learning, and the importance of that learning in terms of their discipline of interest.

The collective process described above ends with the degree specification as a step towards individual departments responding to the Tuning results by considering how their curriculum might best help students achieve the core outcomes, as well as any additional competencies and/or outcomes they may deem important. The process, as figure 1.1 represents, is a recursive one. It (1) begins with consideration of the competencies and outcomes that comprise the learning in a discipline, (2) continues with the identification of those that comprise the core of that discipline and their application in the workplace, and then (3) proceeds to use those results to strengthen individual iterations of the discipline within autonomous departments.

Because the process ends in a specification of particular degrees in specific departments, faculty participants will want to keep colleagues in their home departments apprised of the work of the Tuning group. Colleagues will then know and understand the nature of the initiative and can be of assistance as the degree specification is drafted. Moreover, colleagues will thereby be equipped to participate in a process of examining the departments’ curriculum in response to the results of the Tuning process. *(See chapter 5 for more on application of Tuning at the local level.)*
Conversations about Readiness to Engage in a Tuning Process

Faculty engaged in Tuning will benefit from support by any overarching faculty governance organization within the state or states involved before commencing the full scale implementation. The faculty governance organization’s seal of approval lends credence to the work. In states that have collective bargaining agreements, these groups need to be brought into the conversation early, as their acceptance of the process removes roadblocks that might exist if that step is not taken.

Though the Tuning process is a faculty driven process, support from the governor’s office and key legislative education leaders is important to the institutionalization of the Tuning results once the first stages are in place. Additionally, presidents and provosts need to be aware of and supportive of the process on their own campuses. In states that have been engaged in Tuning, this additional support has been beneficial to the Tuning process.

When working with a professional association, the support from the chief executive officer and the board is important. Thereafter, the relevant planning committee within the association will be the major designers and partners in the implementation – using guides they have developed internally for introducing new initiatives.

Students are another constituent group that should be considered as a potential part of the process. The student voice brings a unique perspective to the conversation which can enhance the process and its results.

In the early Tuning initiatives, each subject area being tuned had at least one student participant on the work group. The prerequisites for a student should be that they are majoring in the field and have had an appropriate number of courses to be able to add value to the conversation. Graduate students may provide the most benefit, since they understand better the overall trajectory of the undergraduate degree. If students are to be included on the Tuning initiative, then it is helpful to provide or reimburse travel. When student participants are included in the work groups, it needs to be with the caveat that sometimes they will be unable to attend due to other obligations. Nevertheless, as with so many other decisions in the planning process, the initiative developers will need to consider how students can best advance the goals of the specific Tuning initiative.

Calendaring

Assuring buy-in from the faculty, as well as student and government groups, takes time. When creating a Tuning calendar, these elements need to be factored into the process. It is important to allow ample time to do this work. Given that faculty drive this process, it is imperative that the academic calendar be the primary consideration. The actual work of Tuning can usually be concluded in an academic year if the appropriate planning is done in the semester prior to the actual Tuning work. Ideally the process would start in the fall term/quarter and be completed by the end of spring term/quarter, with final editing over the summer. Planning for the process would have occurred during the spring of the year prior to tuning.

A kickoff event for Tuning should be held to initiate the endeavour. If organizations have some form of convocation prior to the start, that would be an appropriate time. A kickoff could include a presentation of the process, division into work groups, and then time for each of the work groups to bond and decide how they want to go forward with the work.
Business Community Support

The business community is another constituent group that is equally important to the process and the outcome of the work. Faculty participants will create a list of potential employers for their graduates and then create a survey to assess how the competencies they have created at each degree level resonate with potential employers. The employer group consists of businesses and groups hiring at the point of degree (associate’s, bachelor’s, master’s and doctoral degrees). Graduate programs may also be seen as part of the employer group for those individuals who are seeking an advanced degree.

Developing the list of potential employers and their contacts is done collaboratively within each discipline group. Faculty from various geographic areas can map where their students are employed by surveying their graduates regarding where they are employed or by asking current students where they are seeking employment.

Funding the process

Since Tuning requires faculty leadership and time beyond the usual scope of work, organizers might consider providing some compensation for the work being done. It could take the form of a stipend, reassigned/release time, or some type of professional recognition that could be used in a tenure or promotion review. Each initiating group, however, will likely handle this issue differently.

Tuning costs vary depending on whether or how faculty are compensated. There may be a greater need to provide for faculty who take the lead roles in this work, as they have prime responsibility for moving this work forward within a discipline or at an institution.

Funding sources may include professional development dollars within an institution as Tuning is a form of professional development. If those dollars are not available, a state higher education agency or a higher education system’s governing body may be interested in funding the initiative as it potentially has the impact of improving the number of degrees being awarded. A third option is to seek funding from a private foundation whose funding interests match the outcomes of Tuning, which include clear academic and career pathways; clear student outcomes and competencies; and an increase in retention, completion and degrees awarded.

Funding might also be obtained from private businesses in an area that makes the connection between Tuning and a well-educated workforce. Yet another potential source of funding for institutions, should they qualify, are grants from the United States Department of Education.

IEBC: Advising & Facilitation

The Institute for Evidence Based Change (IEBC) has been charged with expanding the work of Tuning USA nationally. To advance that work, IEBC functions as both a technical advisor and facilitator throughout the process. In the early stages, IEBC staff will provide guidance in conceptualizing Tuning initiatives in advance of the submission of grant proposals. If a grant is awarded, IEBC can provide support in the development of resources, recruitment of participants, and planning of meetings.

Throughout the Tuning process, IEBC will provide facilitation for both project directors and the work groups. At all stages, IEBC should be seen as a resource for support and advice. (See “The Role of IEBC” in Chapter 2 of this guide.)
Coordination of a Tuning Process

Chapter 02
# Chapter 02: Coordination of a Tuning Process

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The Role of IEBC

As Lumina Foundation’s operational partner for Tuning USA, The Institute for Evidence-Based Change (IEBC) serves as the primary consulting group for states and associations that initiate the initiative. As the current funding organization, Lumina Foundation may be in contact with the representatives of the funded initiatives, but aside from concept papers, grant proposals, reports, and communications related to these documents, direct work with the representatives of Lumina will likely be minimal.

IEBC should be viewed as a resource, support, guide, troubleshooter, and advisor throughout the Tuning process, from concept paper to implementation. The following guidelines are based on IEBC’s experience in the coordination and implementation of Tuning initiatives.

In particular, the IEBC team will provide an orientation in advance for organizers and co-chairs as well as a general orientation at the Tuning initiative kickoff for faculty participants. After that kickoff, the IEBC staff will partner with the project director in setting schedules and agendas. Additionally, IEBC staff can advise and assist co-chairs and specialists in moderating discipline group work when needed. In short, IEBC, as Lumina’s operational partner, will work towards the success of each Tuning initiative.
Faculty: the Foundation

Tuning is a large-scale initiative, drawing together faculty from a broad geographic range and involving multiple institutions of higher education, some public and some private. To manage an initiative of this scope, coordination among the various facilitating parties is essential.

Before any description of organizational roles, one point is key: Tuning is a process that is led and driven by faculty and that allows faculty a space to determine what is best for student success across a given discipline. As experts in their fields, participating faculty members collaborate to determine how degree programs can best train students in a discipline for further careers or education.

This essential point dictates the philosophy of coordination that enables Tuning to occur. The system of coordination that is put in place should create a collaborative opportunity for the faculty participants and support them as they complete the process. Thus, the organizational chart in figure 2.1 shows faculty at the heart of the initiative, with each subsequent layer providing various forms of support for their efforts.
Participants: Roles and Responsibilities

To successfully achieve the goals of a Tuning initiative, the following participants need to be included in the preparation and support phases:

State Higher Education Administration or Regional/ National Association Leadership

Institutional Administrations

Project director

Discipline Group Co-Chairs

Participating Support Specialists

Discipline Tuning Group Faculty Participants

Discipline Tuning Group Student Participants

Faculty Unions (when present)

Figure 2.2 indicates a general organizational arrangement of these groups in the structure of a Tuning initiative. While all these groups need to be included, they can be organized in various ways to best suit the system’s existing organizational structure. For example, the higher education administration of one state-based Tuning initiative assigned a representative to each of the Tuning groups (four, in this particular instance) to help structure each group's work, set goals, and troubleshoot problems. In this model, the single project director is replaced with a team of project directors who report to the state administrative officer in charge and who are responsible for only one discipline group.

Initiatives directed by leaders from the state, regional, system, or association, will need to consider what model will work best with their organizational structures. The descriptions below are not rigid and can be adapted to suit the scope and context of any given Tuning initiative.

Regardless of the model developed, these groups of people will need to work together with clear lines of communication to ensure that faculty is equipped to complete the process and to resolve any issues that arise along the way.
Higher Education Administration or Association Leadership

The scope of a Tuning initiative, both in terms of geography and the numbers of people involved, requires that an administrative entity with purview over the various sites and people bear primary responsibility for organizing the initiative. Depending on the initiating party, that organization will likely be either a member of a state’s higher education administering body or the leadership of a consortium or professional society.

As the initiating entity, the administrators or leaders function as project organizers and do not typically work directly with the actual Tuning participants. Their efforts are directed towards the implementation of the initiative and responding to needs identified by the project director. In this role, they are responsible for:

Writing the grant proposal (in consultation with Lumina and IEBC);

Administering the grant funds;

Identifying or hiring a project director;

Communicating with institutions of higher education to recruit participants;

Coordinating with faculty unions (when present);

Providing logistical support as necessary.
Institutional Administrations

The higher education administrators or association leadership will need to work with administrators at colleges and universities to identify faculty participants. Once faculty participants are identified, institutional administrations will not be involved directly in the process. To procure those participants, however, the institutional administrators need to be consulted early. Provosts or deans may want to provide support through assigned time or transportation to meetings.

Depending on meeting format (see below) the project director may need to work with the institutional administration to arrange facilities for gathering faculty participants and on-site catering. As with the union partners, maintaining open lines of communication (through initiative updates and invitations to observe meetings) can help to ensure a successful Tuning initiative.

A Note on Selecting Representatives

Tuning benefits from the participation of tenured faculty who are at least of the associate professor level. Because Tuning looks towards potential curricular implementation, a representative from a given college or university needs to be in a position to report back to a home department and to work with departmental leadership on any potential implementation deemed appropriate. The Tuning faculty representatives need to have enough experience to understand the construction of a department’s curriculum. Untenured junior faculty are often focused on learning how to do the job, so they may not be the best candidates for the Tuning initiative; moreover, administrations need to be aware, too, that untenured junior faculty can be in a vulnerable position in terms of retention, promotion, and tenure decisions.

Project Director

The project director functions as the point person on the Tuning initiative, and therefore works as the intermediary between the initiating administrative entity and the Tuning participants. As the initiative unfolds, the director will be the person to whom IEBC will provide the most direct support.

Initiative Coordination

The project director assists the administrative leadership in drawing the various participants—faculty, union contacts, and institutional administrators— together toward successful completion of the Tuning initiative. Responsibilities in this area include such activities as working with provosts or deans to identify faculty participants, identifying Tuning group co-chairs, processing travel reimbursement paperwork, and communicating with union leadership to keep them informed of progress.

An early aspect of the initiative coordination will be consulting with the staff from IEBC to provide a workshop for the co-chairs and any specialists (see below) who might be assisting the Tuning groups with their work.

Facilitating Tuning Group Work

As the on-the-ground organizer, the project director will bring the faculty participants together in their discipline-specific groups and provide the means to complete their work. This area includes setting agendas for the meetings and determining the overall demands of the schedule. For example, the project director will need to help groups look
toward future steps, such as developing and distributing survey tools, and develop timelines for completing that part of the work.

Once faculty work groups are under way, the project director will need to maintain contact with the discipline group co-chairs and encourage them to give regular updates of progress. Working with the staff from IEBC, the project director can use those updates to help work groups make plans for initiative completion, identify and troubleshoot problems, and generally respond to work group needs. The updates can take several forms, such as conference calls or in-person meetings held after a work-day.

Logistical Planning

The project director handles the logistics of the Tuning group meetings. This work requires scheduling meetings, locating meeting sites, and arranging catering. The nature of those arrangements will depend on the particular type of meeting.

Past initiatives have handled mass-meetings by rotating them around different colleges and universities or by meeting at a conference-hosting hotel. In either case, the project director will need to work with relevant site personnel to make those arrangements. For discipline-specific group meetings, some initiatives have utilized internet-based tele-conferencing, in which case, the project director will need to secure cameras and software.

A Note about Technology

In addition to the logistical elements noted above, the project director may need to establish an online document-sharing site for workgroups. For Tuning initiatives relying on computer-enabled conferencing, these sites will be most important so that discipline groups can work productively on the learning competency and learning outcome statements. For example, the pilot and early Tuning states relied on either participant organized Blackboard sites or SharePoint sites (some of which enabled video conferences) set up by the state administrators. Whatever technological strategy taken, the project director will need to help faculty participants access and understand the software.
Discipline Group Co-Chairs

As with any such collaborative initiative, each participant’s role is important, but perhaps no role can have as great an effect on the successful work of the discipline groups as a group’s co-chairs. Co-chairs are responsible for focusing, moderating, and documenting the group’s conversations and work. They are also responsible for updating the project director about the group’s progress or concerns, and will work with IEBC staff to resolve any issues that may arise. They can receive an orientation in advance to provide them with the knowledge necessary to be effective in their role.

The co-chairs of a group will need to define for themselves just how they would like to approach the moderation of the group’s work, and the IEBC team can assist them in considering the options. Some specific responsibilities, however, will need to be divvied up by the two co-chairs.

These responsibilities include:

- Creating a contact list;
- Setting goals for the group;
- Assigning tasks for next meetings;
- Distributing reflections to participants after meetings.

How the two co-chairs choose to share those responsibilities will need to be negotiated between them. They will also need to find a comfortable means of working together within the meetings. Co-chairs need to be able to work well together, and they should strive for clear and open communication with each other. That will be important in collaborating on the establishment of goals and a shared sense of what the group needs to do.

In addition to facilitating the work of faculty participants, the co-chairs will need to work with any specialists (see below) who might be assigned to help the group complete its work. For example, an assessment specialist might sit in with the faculty to help formulate the surveys or focus group instruments. The specialists, if present, can be a tremendous benefit, but they will have to be given a sense of what is needed so that they can be of greatest help.

For example, in one Tuning initiative one co-chair served as the out-front facilitator of the conversation while the other documented the group’s progress as a scribe. In another group, one co-chair moderated by calling on participants, summarizing statements, and writing the group’s input on a white-board while the other probed and consistently tried to challenge the group with what might have been overlooked. In a another group whose field often gathers in similar faculty groups, the co-chairs sat back and allowed conversation to develop, simply assigning tasks when needed.

Finally, the co-chairs will need to maintain clear communication with the project director, in whatever form that takes. Pilot and early Tuning states used monthly conference calls so that co-chairs could report progress and problems, receive advice, and prepare for the next meeting.
Specialists

Specialists may not always be a part of the Tuning process, but can be a helpful addition. Specialists might include education specialists familiar with the writing of competency and outcome statements or assessment experts who are trained in developing survey instruments. How they are used can vary: They might be assigned to a specific discipline group for the duration of the process or a single specialist might float between more than one group.

If such specialists are used, it will be important that they understand their role: to support the faculty participants in their efforts by providing guidance when requested or when needed. The specialists may find it helpful to consult with the co-chairs periodically to report observations or offer suggestions. Co-chairs may, reciprocally, find it helpful to consult with the specialists.

Faculty Participants

The role of a faculty participant is to collaborate with colleagues from other institutions to work through the steps of the Tuning process (see Chapter 4, Five Steps to Tuning). Faculty participants will be identified by department chairs, deans, or provosts.

They will need to work with the co-chairs and, as needed, receive guidance from them and any specialists as they work. Perhaps the most important way that faculty participants will need to coordinate with others is by communicating with fellow faculty at their home institutions.

Tuning has the potential to increase student success by helping students to understand more clearly what they are learning, but that only happens if the results of the process are allowed to inform faculty practice in the classroom. Participants, therefore, will need to offer periodic updates of the discipline group’s work to home departments at faculty meetings, through department chairs, or simply in informal conversations. Doing so will aid the process as it moves from discipline group meetings to home departments.

Student Participants

Student participation in the Tuning work group makes the work of Tuning unique, since it indicates the value of student experience in shaping the core competencies and outcomes of a degree program. The role of the student participants is similar to that of the faculty participants: They collaborate with the faculty in the work group in each stage of the process.

Past Tuning work groups have found the input of students valuable in clarifying student understanding of curricula and in identifying areas which faculty might take for granted but that need greater explanation for students. Student participants are not positioned as sideline players, but as equal members of the group—albeit with less experience in the discipline.
Faculty Unions

Depending upon the system, unions may or may not be directly involved in the Tuning process. Regardless of the level of their involvement, it is beneficial to establish and maintain open lines of communication that support the collaborative nature and goals of the initiative. These conversations need to begin during the development stages of the Tuning work.
Chapter 02 | Coordination of a Tuning Process

Checklist

Include the following participants during preparation phase:

- State higher education administration or regional/national association leadership
- Faculty unions (when present)
- Institutional administrators
- Project directors
- Discipline group co-chairs
- Participating support specialists
- Discipline tuning group participants
- State, consortium, compact, or association leadership decide what model will work best with their organizational structure
- If faculty unions are present, open and maintain lines of communication between the Tuning initiative organizers/director and the union leadership
- Consult institutional administrators early in the process of identifying faculty participants
- Secure meeting spaces and on-site catering arrangements (with the consultation of institutional administrators, if necessary)
- If meetings will be held remotely, secure cameras and video-conferencing software
- If necessary, establish an online document sharing site for faculty workgroups

Ensure that co-chairs will:

- Create a contact list
- Set goals for the group
- Assign tasks for next meetings
- Distribute reflections to participants after meetings
- Maintain clear communication with the project director
# Chapter 3: Pre-Process

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Pre-Process: Initiating Tuning

The success of any Tuning initiative depends on preparing for it with forethought, recruitment and orientation. Because Tuning is a process that requires the coordination of people and resources that will be unfamiliar to participants, and that unfolds over a long time frame, starting the necessary preparations early will help to ensure that the initiative develops smoothly. IEBC will provide support throughout the pre-process to ensure that important areas of preparation are addressed.

What follows is an overview of the preparations that need to be made before engaging faculty work groups in Tuning. The subtopics are listed roughly in the order in which they should occur, though there will be variation specific to each agency or association undertaking Tuning.

Inform Partners

Success depends first and foremost on the various involved parties understanding what Tuning is and the benefits that it brings. Therefore, the first step of preparing for a Tuning initiative is to inform the potential partners about the process and the perceived need for it. (See Appendix 3 for sample introductory letters.)

This step will require communicating with the potential participating groups so that they understand the nature and purpose of Tuning. Thus, colleges, universities, and/or specific departments (depending on who is initiating the process) need to be aware that Tuning aims toward the review of curricula with the potential for revision. Professional associations and unions need to be apprised of the emphasis on the key role of faculty, who will lead and determine the results of the real work of Tuning. In other words, the points of interest for the various partners need to be anticipated, so that they can be met and incorporated into planning.

The type of organization initiating the Tuning endeavor will affect who should be informed about the process and its aims. National associations (such as the American Historical Association, American Psychological Association, or other such entities) represent specific disciplines or professions, which often gives them direct lines of communication to members, such as chairs and faculty in the given area. Communication is facilitated by that close relationship.

In Tuning initiatives initiated by states or consortia, those lines of communication can be weak or cumbersome, and it can be important to brief the administrators responsible for faculty activities, most often provosts or deans. While written communication provides one means of doing so, the experience of some early participating states suggests that in-person meetings, when possible, may better ensure adequate administrative support for participating faculty.
Identify a Project Director

The selection of a project director is an important element of a successful Tuning initiative. The project director plays a pivotal role. S/he serves as the liaison among the different partners and identifies needs so that they can be communicated to whoever is best positioned to meet them. In addition, the project director facilitates the faculty work groups by coordinating meetings and collecting and synthesizing the work.

Tuning is a process that depends to a large extent on trust being built among and between the faculty and the partners who are supporting their efforts. Because Tuning is faculty-driven, the best candidates for the role of project director will have experience as faculty. Naming, for example, a retired faculty member or an active faculty member whose research interests are in the area of Tuning’s work can help to build that trust, because the faculty participants will be receiving their instructions from “one of their own.” (See Appendix 2 for role responsibilities.)

Determine Meeting Approaches and Sites

The size of the specific Tuning initiative, both in number of participants and geographical region covered, will require the initiating partner and the project director to determine how meetings will be held and, subsequently, when. An initial kickoff meeting that all participants attend in person is strongly recommended. Bringing the participants together again at strategic moments can also benefit the process.

In smaller regions or in individual states, monthly work-group meetings might continue to be held in person at central sites. In larger regions or states, due to the expense of such mass-gatherings, other strategies for facilitating the faculty work groups may need to be defined. Both Utah and Texas used computer-mediated video-conferencing for the monthly work-group meetings and had great success with that approach.

The project director will need to work with the initiating partner and in consultation with IEBC to develop a meeting strategy that best fits the specific parameters of the intended initiative. As part of that process, locations for mass-meetings and other in-person meetings should be identified. Doing so will require communication and collaboration with potential hosts, such as university partners who might have conference facilities available that are suitable to the initiative’s needs. It is important to note that when using higher education facilities for meetings no one place or type of institution is used exclusively. Community colleges, private institutions, and state colleges and universities should all be considered as host institutions.
Build the Calendar

The project director, in collaboration with those initiating the Tuning endeavor and in consultation with IEBC, will need to build the calendar for the work of the Tuning groups. That calendar might best be tied to the academic calendar since faculty often disperses in the summer.

Identifying dates by which the various steps of Tuning should be completed may be the most important part of building the calendar. While not a rigid set of deadlines, the calendar should allot sufficient time to each step of the Tuning process while at the same time establishing goals for the work groups that will pace their work. That being said, some steps might have periods of overlap or moments when two are being pursued by different participants in the initiative, such as in steps two and three, when work groups might be mapping career pathways and drafting survey instruments.

The calendar should identify dates for the in-person meetings so that host facilities and catering can be made and catering can be booked in advance. For meetings held via video-conferencing or other such technologies, monthly meetings will need to be assigned. Doing so may involve setting a date by which those video-meetings are completed so that faculty maintains progress. Online polling services can facilitate this process.

Identify Participants

The project director will need to consult with provosts, deans, and department chairs to identify participants for the Tuning initiative. Two different types of participant need to be identified by the project director: faculty participants, who make up the majority of each Tuning work group, and one or two student participants for each Tuning work group. To complete that task, the project director should be aware of three key issues.

First, institutional administration needs to understand the nature and aims of Tuning so that they can be supportive throughout the initiative and, more importantly, throughout the subsidiary process that occurs when faculty completes the process and return home to implement the results. Lines of communication with administration need to be established early and updates need to be provided to them often.

Second, participants will ideally be faculty who are well-positioned to lead a local effort to implement the results of the Tuning process. This means that the ideal faculty participant will be an established member of a department, someone at the rank of at least associate professor with tenure. Because Tuning ultimately aims for review of curricula, the faculty participant needs to have the trust and respect of their colleagues to lead that effort.
Third, faculty participants should be committed to working collaboratively towards the goals of Tuning. The use of nomination forms can assist with identifying such individuals. Department chairs or self-nominating individuals, for example, can be asked to provide some history of their collaboration on previous initiatives. Those nomination forms can be useful in the selection of co-chairs, too. (See below.)

The processes by which the project director identifies faculty participants will vary, depending on what sort of group is initiating the endeavor.

When Tuning is being undertaken by state offices of higher education, the project director will need to communicate and work directly with university and college administrations first to explain the process and establish support there. The higher-level administrators can then refer the project director to deans and chairs for identification of the potential participants.

When Tuning is being undertaken by regional or national consortia of higher education institutions, the project director will likely wish to work in the same fashion as described above, whether or not state offices of higher education will be involved in the initiative. If state offices of higher education are not involved, having deans and chairs identify suitable faculty may work best, since regional and national consortia of colleges and universities often work together through the upper levels of their administrations.

When Tuning is being undertaken by national professional or discipline associations, the project director can undertake different strategies for identifying participants. An association might set up a nomination process by which suitable candidates for the work are named, with an election to determine the specific number of participants desired. (See Appendix 4 for sample nomination materials.) Alternatively, participants might be invited or appointed. For example, a Tuning sub-committee might be formed from a committee on pedagogy already existing in the association’s structure. Or, the project director might work directly with university and college department chairs to identify participants.

The processes by which the project director identifies student participants can follow the strategies listed above for identifying faculty participants. However, because student representation is smaller on the committees, a nomination system might become a procedural matter. Students might also be identified by the faculty participants after the initial kickoff meeting, with one or two members of the group selecting one of their own students, although that approach may prevent students from feeling fully integrated into the process, since they will not be present at the initial meeting. Yet another approach might be to include various students at different stages in the process. Ultimately what works best to advance the goals of any specific initiative needs to be the determining factor in how students are incorporated into the process.
Students who are advanced in the degree program are obviously preferable, since they have the fullest experience of the curriculum. In one Tuning initiative, a student who had attended community college, completed the four-year degree, and had enrolled in graduate work, was recruited, since he brought the richest experience of the various curricular systems.

The project director will want to consider two points regarding student participation. First, students’ schedules are determined by their classes and exams, which may make attendance at some meetings difficult. Second, students lack the financial means to be full participants in the process when meetings are held some distance away. Stipends to support them and to cover their expenses are important.

(See Appendix 2 for role responsibilities.)

Select Co-Chairs

Co-chairs serve the individual Tuning groups as leaders for the work. The selection of co-chairs can be handled in a variety of ways. The two primary approaches to identifying co-chairs have been election by the work group or selection by the project director. It is important that co-chairs represent different segments of higher education. Therefore, if there is participation from both two-year and four-year institutions, ideally there should be one co-chair from each of those segments.

Election by Work Group: The election of co-chairs by members of a work group is, perhaps, the most straightforward way of identifying co-chairs. The benefit of this approach is the transparency of the process, since all work group members will have an opportunity to serve and will have a vote to determine the co-chairs. The drawback, however, is that the co-chairs will not be in a position to receive an orientation in advance of the Tuning process, which means they will need support in understanding their role quickly so that the Tuning work can proceed. If all members of the work groups are given a copy of this manual in advance of the kickoff, then this problem can be mitigated.

Selection by Project Director: If nomination forms have been used to identify participants for the Tuning initiative, then co-chairs can be selected by the project director in advance based on the completed forms. (See Appendix 4 for a sample.) The benefit of this approach is that co-chairs can receive advanced orientation so that they know what to expect and can assume leadership of the group at the kickoff. The drawback of this approach is the lack of transparency for members in the group. One potential way around this problem is to include questions on the nomination form regarding willingness and ability to serve as a co-chair.

(See Appendix 2 for role responsibilities.)

Compile Resource Materials

Tuning is a process, as described throughout this guide, that endeavors to formulate clearer understanding of what students should know and be able to do. This goal is achieved by collaborating and, equally important, consulting with groups of stakeholders who are invested in the results. To assist the faculty participants with understanding the Tuning process and completing it, the project director can work with IEBC to compile resource packets for the work groups.
The resource packets will be most helpful if they include three types of documents:

1. Tools that support the Tuning work, which might include Bloom’s Taxonomy and glossaries of the key terms used in talking about Tuning;

2. Models of the various documents that Tuning groups produce, including sample competency and outcome documents, sample surveys, and sample degree specifications (some of which appear as appendices in this guide);

3. Discipline- or profession-specific documents, such as professional standards, that specific Tuning work groups will need to consult as they complete the initiative.

Any one or combination of three ways to distribute these materials might be used. They can be handed out in folders on the day of the kickoff. Alternatively, they might be posted on a website from which they can be viewed and downloaded. Finally, they might be put on flash drives and given to participants at the kickoff. This last means has been extremely effective in providing easily accessed resources to participants in some of the previous state initiatives.

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### Plan Orientation

An orientation of the faculty participants will occur with support from and in consultation with IEBC. A Tuning endeavor may work best if instruction happens at multiple points to address the different stages of the process. Three moments need to be considered as part of the pre-process. There may be others depending on individual initiative needs. IEBC can provide guidance in planning additional orientations.

Orientation and instruction are the procedural heart of a Tuning Kickoff. The Kickoff is the first time faculty participants (other than possibly co-chairs, if they were identified in advance) will receive explanations of the work of Tuning. There are two focuses at the kickoff in terms of the process being undertaken: orientation to Tuning and instruction in the development of competencies and learning outcomes. The orientation can include an overview of Tuning, containing some of its history, its goals and five steps; as well as an analysis of the various documents that each Tuning work group will produce. The instruction can include an introduction to and workshop in the writing of effective competency and learning outcome statements.

A Survey Workshop may be conducted part-way through the process. Tuning work groups will need to collaborate with specialists to develop surveys and focus group strategies to gather input from students, alumni, colleagues, and potential employers. Depending on the involvement of specialists, a workshop can be held so that faculty understand the purpose of the various surveys and fundamental considerations in their design and administration. This workshop could be led by any assessment specialists that might be part of the initiative.

A Transition and Implementation Workshop may be the most important of the three potential workshops, since the Tuning groups’ work can only bear fruit if the participants return to their home departments to initiate curriculum review and any necessary revision and appropriate changes to practice. Faculty participants, having completed the work of their Tuning group, need support as they confront that task. Therefore, a workshop needs to be scheduled to guide the participants in how to initiate a process of implementation at the local level.
A Final Note on Preparation

This discussion of what sorts of issues need to be considered in advance of a Tuning initiative is likely not exhaustive, because each Tuning initiative will experience its own idiosyncrasies. This overview aims to describe some of the early tasks. Should anything unexpected arise or should circumstances seem to require a different sort of planning, the staff at IEBC can answer questions and help to anticipate issues and provide guidance where necessary.

That being said, the key theme relevant to any sort of Tuning initiative is communication. Tuning yields greater potential benefits when all the groups involved are kept informed of the progress made during the initiative. It is critically important that as one prepares for a Tuning process and while it is being implemented, all of the parties engaged in this work be informed of the progress. This communication may take the form of reports to committees, departments, legislative groups, academic administrators, etc., both in person and in written/electronic format.
Inform potential partners about the process and the perceived need for it

Define the organizational structure of the initiative for institutional administrators

Identify a project director

Determine meeting approaches and sites

Build the calendar, in collaboration with those initiating the Tuning endeavor and in consultation with IEBC

Identify participants, in consultation with provosts, deans and department chairs

Select co-chairs

Compile and distribute resource packets

Include:

- Tools that support the work being done
- Models of the various documents that Tuning groups produce
- Discipline- or profession-specific documents

Plan orientation structure and workshop schedule—Include:

- A Tuning kickoff
- A survey workshop
- A transition and implementation workshop
The Five Steps of Tuning

Chapter 04
Chapter 4: The Five Steps of Tuning

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Step One: Define the Discipline Core

Defining the core of a discipline is to articulate in explicit terms the body of knowledge and abilities that are particular to specific degrees in a given discipline. Individual disciplines will proceed in different ways, with the members of each Tuning group needing to develop for themselves an approach that works best for them, as discussed below.

In general, however, defining a discipline’s core involves a fairly standard overall approach in which two categories of statements are developed: competency statements and learning outcome statements.

The distinction between the competency and outcome statements is that the former names or describes areas of learning within a discipline, and the latter describes the student response to learning within those areas.

Competencies are dynamically related sets of knowledge and processes that make up discrete sub-areas of learning within a discipline. See figure 4.1 for examples (page 37).

Learning Outcomes are what students should know and be able to do in response to a learning experience. As part of the requirements of a degree program, they isolate measurable assessments of the proficiency with which students have mastered the sets of knowledge and processes that make up a given competency. Again, see figure 4.1. (page 37)

Defining the core of a discipline, therefore, is a process of (1) identifying the categories of learning that comprise the essential elements of a discipline and (2) identifying the ways in which students can demonstrate their proficiency in or grasp of what they have learned at each degree level. Defining the core moves from identifying what faculty believe students should learn to then translating the resulting competency statements into student-focused outcomes, examples of which appear in figure 4.1. (page 37)

To cast that task as a question: What would representative faculty all agree must be included in the degree program? The goal here is to produce a document that clearly identifies what students need to learn. It does not preclude the possibility of competencies, outcomes, or bodies of knowledge that individual faculty or departments might see as important in addition to the essentials identified by a Tuning group. Those additions become the distinctive features of a particular program and its specific faculty.

Remember that the goal here is to produce program-level outcomes, not learning outcomes for every class a department might offer. Therefore, working from the broad categories of learning (the competencies) can be the most beneficial approach.
Strategy:

To define the discipline core, faculty will likely find the following general sequence the most efficient approach to this process:

A. Sketch a General Discipline Description

B. Identify Competencies

1. Draft General Competencies
2. Draft Discipline-Specific Competencies

C. Identify Learning Outcomes

This approach can become more complicated for professionally- or vocationally-oriented disciplines, which often have professional standards documents that prescribe areas of emphasis. (This issue is addressed below.)

A. Sketching a General Discipline Description

Because Tuning aims to identify competencies and learning outcomes in relation to specific degree levels in a specific discipline, work groups may find it useful to begin by sketching a description of the discipline and its degrees. This strategy does not aspire to creating a detailed picture of the discipline, but rather an overall picture of what the discipline is all about.

Work groups might consider the following sorts of questions:

- On what does the discipline focus?
- What approaches does the discipline utilize?
- What parts of the discipline are established in early stages of education?
- What parts of the discipline are established in advanced stages of education?

Answering these questions can establish a foundation from which to begin drafting the competencies and learning outcomes. From that foundation and within the context it establishes, work groups can formulate some initial descriptions of what distinguishes various degree levels from one another.

B. Identify Competencies

According to our European colleagues, competencies are understood to be a “dynamic combination of cognitive and meta-cognitive skills, knowledge and understanding, interpersonal, intellectual and practical skills, and ethical values.” So what does that mean?
As noted above, competencies are areas of learning. Some competencies are specific to a discipline; others are general (common to almost any discipline, although specific emphases of general competencies will vary depending on the given discipline). We can think of competencies as teacher-centered: they articulate the areas of knowledge that teachers believe should be taught. Competencies combine various sorts of knowledge and skills in dynamic relationships that faculty sometimes take for granted.

Starting with the identification of competencies allows faculty to make those dynamic relationships explicitly state what they want students to learn. Doing so lays the groundwork for the second stage, drafting learning outcomes, that can tease out the different components of those dynamic relationships.

1. Identify General Competencies

General competencies are those competencies common to post-secondary curricula. For example:

- Oral and written communication
- Capacity to learn and update learning
- Reasoned decision-making

Two particular aspects of these examples are worth noticing. First, each identifies desired categories of learning for students in any discipline. Second, each identifies a variety of related components; the first example might include an awareness of rhetorical structures, sensitivity to audience, and proper execution of grammar and mechanics, each of which could be the focus of a specific learning outcome. Beginning with general competencies offers several benefits.

First, naming such competencies makes explicit shared cognitive and meta-cognitive abilities—knowledge and understanding that the different disciplines participate in teaching but that one individual discipline is not solely responsible for teaching.

Second, these identifications provide a baseline against which work groups can begin to distinguish their disciplines from general educational competencies.

Third, Tuning work groups can consider the ways in which their disciplines participate in instruction towards those general competencies.

While general education programs aim to give students a foundation in various subjects and skills, general education competencies are overall results expected of all graduates, regardless of major. General Education is the broad body of knowledge expected of all college graduates at the point of degree. The areas of knowledge include the liberal arts, humanities and sciences.

Teaching writing strategies, for example, is often the purview of composition programs, but unless students receive continued opportunity to build on that foundation, their honing of those abilities will be minimized. Therefore, to facilitate the inclusion of these general sorts of knowledge in the learning outcome statements, it is important to lay their foundation in general competency statements.
This stage of the Tuning process invites faculty members to articulate the areas of learning students need to master to be successful in the discipline or profession in order to determine what their degree program should teach. The Tuning work group will likely find it helpful to take that approach as a means of identifying what the discipline is really about, since it will allow faculty as participating experts to determine what should comprise the core.

The task, then, is to determine what areas of learning comprise the essence of the discipline.

The sample competency statements in figure 4.1, written by participants in the initial Tuning efforts, demonstrate the ways in which faculty members articulate the complex sets of knowledge they aspire to inculcate in students. Notice that each of these is a broad umbrella that implies various smaller components. The competency from history, for example, includes knowing what is included in the historical record, understanding what causes it to be complex, and recognizing what sorts of problems arise and why. The statement also implies in its use of “emphasize” that students will apply this learning in service to particular uses. The same composite nature is also evident in the other two examples.

Competency statements such as these are useful because they enable Tuning teams to group similar types or areas of knowledge and skill into clusters. Starting the process with the drafting of competency statements enables faculty to define the broader categories of learning in which they wish students to gain proficiency. Once those statements are written, one can then break out the various, more specific, items of knowledge and skill in the form of learning outcomes, which is the second half of this first step.
## Chapter 04 | The Five Steps of Tuning

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<thead>
<tr>
<th>Discipline</th>
<th>Competency Statement</th>
<th>Outcome Statements</th>
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| History             | Students will come to emphasize the complex and problematic nature of the historical record. | Recognize a range of viewpoints  
                        |                                                                                       | Compare competing historical narratives.  
                        |                                                                                       | Challenge arguments of historical inevitability.  
                        |                                                                                       | Analyze cause-and-effect relationships and multiple causation.  
| Physics             | Students possess understanding of the nature of science and the nature of physics.      | Give examples of what constitutes convincing evidence for a scientific explanation;  
                        |                                                                                       | analyze the roles of experiment, interpretation of experimental results, and argument in establishing evidence.  
                        |                                                                                       | Explain how experimental evidence can falsify scientific hypotheses and how it can contribute to acceptance of scientific concepts.  
                        |                                                                                       | Categorize the variety of approaches to research in physics; analyze the distinctive roles each approach plays in the development of physical explanations.  
                        |                                                                                       | Define physical cause and effect; suggest how cause-effect relationships can be inferred from experimental data.  
                        |                                                                                       | Identify main points of scientific ethics and responsibility relating to laboratory practice, work with students and collaborators, co-authorship, publication and public advocacy.  
                        |                                                                                       | Explain how science is a community effort and argue both the necessity of scientific cooperation and the advantages and disadvantages of solitary science.  
                        |                                                                                       | Identify and relate the major historical threads in the development of physics.      |
| Civil Engineering   | Students should recognize design as an iterative process that is often creative, and involves discovery and the acquisition of knowledge. | The civil engineering graduate designs a system or process to meet desired needs within such realistic constraints as economic, environmental, social, political, ethical, health and safety, constructability, and sustainability. |

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2 From the Utah Final Tuning USA Report, p. 3  
3 From the Utah Final Tuning USA Report, p. 3.  
4 From the Utah Final Tuning USA Report, p. 5.  
5 From the Utah Final Tuning USA Report, p. 5.  
6 From Tuning of Civil Engineering in Texas, p. 7.  
7 From Tuning of Civil Engineering in Texas, p. 7.
C. Draft Learning Outcome Statements

If competencies are teacher-centered statements of the general sub-areas of knowledge that faculty believe they need to be teaching, then learning outcomes are student centered statements that state explicitly what knowledge, understanding, and skills students should have when they have completed their course of study. Another way to think of this is that learning outcomes statements define in assessable terms what a student should be capable of doing to demonstrate that he or she has attained the learning prescribed in the competency statements.

Writing Effective Learning Outcome Statements

Within the Tuning process, the writing of good learning outcomes begins with a return to the competency statements drafted in the first part of this process. As noted there, the competency statements often seek to bring together specific areas of knowledge and skill in dynamic relationships. Thus, writing effective learning outcomes begins with an analysis of the competency statements, in effect, to itemize them, to break out the individual areas of knowledge and skill that comprise them. New statements then need to be drafted for each of those items to identify what students should know and be able to do.

A good learning outcome statement should be SMART:

Student-Centered:
The statements need to make clear to students what they will be expected to know or do to successfully complete the degree. While competency statements may seem to clearly state what we want students to learn, they often combine various elements of knowledge and skill, which necessitates their translation into more specific areas or items of knowledge.

Measurable:
The statements need to facilitate clear means of assessment. If a learning outcome statement is well-written, then a means of assessment will be easily imaginable.

Action-Oriented:
The statements need to utilize strong verbs. Strong verbs help students to understand what will be expected of them in their course of study, because they tell students what they should be able to do with the knowledge and skills that make up the core of the discipline. Figure 4.2 provides a series of active verbs drawn from Bloom’s Taxonomy. Tuning groups may find consulting the table helpful as they translate the competencies into outcomes.

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a The following was adapted from The University of Central Florida’s Office of Experiential Learning webpage “Writing SMART Learning Outcomes. URL: http://www.explearning.ucf.edu/categories/For%20Students/Co-op_and_Internships/Registered_Students/Tips_for_Success/195_152.aspx. It originates in “Developing Effective Learning Objectives,” by Kansas State University Career and Employment Services.
Results-Driven:

The statements should address the end-result of a student’s learning process or the outcomes at the completion of a degree. As a process, Tuning endeavors to define for students what they should be able to do as a result of their learning, so the learning outcome statements should identify such gains.

Tailored to Specific Degree Levels:

The statements need to be scaled according to whether the outcomes are appropriate to associate, bachelor’s or master’s degree work. What faculty expect of students at the end of two years is not as sophisticated as what is expected of graduates with bachelor’s or master’s degrees. Because Tuning aims at making explicit what is expected of students at each level of higher education, learning outcome statements need to reflect the differences of each degree, and thereby provide an outcomes-based description of each degree. (Groups may wish to consult Lumina Foundation’s Degree Qualifications Profile, in beta form as of August 2011 for assistance in conceptualizing appropriate levels.)
Figure 4.2: Action Verbs in Bloom’s Taxonomy

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Comprehension</th>
<th>Application</th>
<th>Analysis</th>
<th>Synthesis</th>
<th>Evaluation</th>
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<tr>
<td>Define</td>
<td>Restate</td>
<td>Employ</td>
<td>Plan</td>
<td>Appraise</td>
<td>Judge</td>
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<td>Repeat</td>
<td>Identify</td>
<td>Distinguish</td>
<td>Compare</td>
<td>Design</td>
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<tr>
<td>Name</td>
<td>Recognize</td>
<td>Use</td>
<td>Compose</td>
<td>Estimate</td>
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<tr>
<td>Recall</td>
<td>Discuss</td>
<td>Differentiate</td>
<td>Propose</td>
<td>Revise</td>
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<td>List</td>
<td>Describe</td>
<td>Diagram</td>
<td>Evaluate</td>
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<td>Relate</td>
<td>Tell</td>
<td>Analyze</td>
<td>Plan</td>
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<td>Record</td>
<td>Locate</td>
<td>Assemble</td>
<td>Evaluate</td>
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<tr>
<td>Underline</td>
<td>Report</td>
<td>Choose</td>
<td>Evaluate</td>
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<tr>
<td>Delineate</td>
<td>Review</td>
<td>Score</td>
<td>Evaluate</td>
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<tr>
<td>Specify</td>
<td>Summarize</td>
<td>Rate</td>
<td>Score</td>
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<td>State</td>
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<td>Label</td>
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<td>Match</td>
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- Judge
- Appraise
- Design
- Estimate
- Revise
- Evaluate
- Propose
- Select
- Score
The examples of learning outcome statements in figure 4.1 were written by participants in the initial Tuning efforts. Note how they spell out the above competencies through their use of active verbs and specifically identified bodies of knowledge and abilities.

In figure 4.1, each of the learning outcome statements offers a particular point of focus for the student—unlike the competency statements—in effect clearly laying out how the knowledge and skills identified in the competency statements show up in the course of their learning. Each of the samples identifies how students engage with those areas of knowledge and learning.

For example, in the history statements, the competency is broken down into four areas, each of which defines how a student “emphasizes the complex and problematic nature of the historical record.” It is done by recognizing, comparing, challenging, and analyzing (i.e., the skills) a range of viewpoints, historical narratives, arguments, cause-and-effect relationships and multiple causation (i.e., areas of knowledge). We find the same sorts of statements in the physics example.

Notice, however, that the civil engineering example takes up a slightly different form: It explains in a single statement what students must do (complete a design—the skill) within the context of various constraints (areas of knowledge). We might spell out more fully how students come to learn about and deal with those various constraints in order to fill this out, but perhaps not. This issue will almost certainly arise: how far down should we dig in order to lay out the knowledge and skills expected of students? The key to resolving the issue is to remember that Tuning aims for program-level outcomes, and so the nitty-gritty course-level outcomes need not become a focus. Course-level outcomes are the domain of individual departments.

Students and faculty benefit from outcomes that use active verbs and the level of specificity as featured in each of the examples shown—and in all good learning outcome statements. Students benefit from the specific nature of the statements and the strong verbs that make clear the expectations they must meet. Faculty benefit from these features, because the statements facilitate the development of suitable assignments that assess the degree to which students are meeting those expectations. In effect, such statements tell students what is expected and enable faculty to develop the most effective tools for assessing their success.

Dealing with Professional Standards Documents

Degree and professional programs that are heavily accredited will confront the challenge of differentiating their professional standards/accreditation documents from the documents produced through the Tuning process, and some groups in the earliest Tuning initiatives have initially felt that the first step of Tuning is a “reinvention of the wheel.” As Dr. Jim Nelson has argued, “The Tuning process does not seek to supplant” such documents; “Rather, Tuning is complementary....” (See Appendix 5 for the full text.)
The distinction between professional or accreditation standards and Tuning documents rests with the audience: Professional or accreditation standards documents are aimed at practicing professionals in a field, and as such, they define practices for those who already hold a degree, whereas, the products of the Tuning process state in terms clear to all stakeholders (faculty, students, parents, potential employers) what students know and can do upon completion of a given degree. With the employability map created in Step Two, Tuning’s products help students, parents, and even policy-makers understand more clearly what academic preparation is required to be employed in any given field.

There is overlap between Tuning and professional or accreditation standards, but Tuning aims at a different sort of product. Because professional standards or accreditation documents speak more directly to professionals practicing in a given field, they describe best practices for those professionals. In the Tuning process, experts (faculty work group participants) write learning outcomes that define assessable means of determining whether students have attained the requisite knowledge as defined by standards.

If a Tuning work group confronts this challenge, it might return to the above framing for the task: imagine what your discipline would teach unencumbered by any outside influences and based solely according to discipline wisdom.

Once a list of competencies and outcomes are developed under that model, compare the list to the discipline’s professional standards documents:

| What has the desirable list included that the standards have not? |
| What has the desirable list left out that the standards document includes? |

Asking these questions will reveal where your group finds the standards to be deficient in terms of the relevance to student learning and what the professional organization should have degree programs include in their curricula.

Should the comparison reveal elements of the standards document that are not on the idealistic list, the discipline group will likely want to incorporate those items into the list of competencies. To do so, think of this part of the process as unpacking the language of the standards so that it is a clearer articulation of what your group believes students should learn in the discipline’s various curricula.

Discipline groups who have attempted to work first from their professional standards documents have often struggled to move past those documents’ representations of what comprises a discipline’s or profession’s core. While the agencies that produce such documents are often well-placed to make such considerations, the resulting standards documents may not always be as current as the faculty experts in the field know they should be.

Moreover, standards documents do not always include some items of knowledge that are important. For example, a Tuning work group for elementary education determined that faculty should be teaching students about the standards
document itself, along with the other structures that govern teachers as a competency area. They considered drafting relevant learning outcomes under it. That sort of self-referential knowledge is rarely included in standards, but it is often essential for individuals working in a given field.

That being said, some disciplines’ professional associations have already taken steps towards defining general outcomes within the discipline. In Utah, the history work group, for example, took the statements drafted by the American Historical Association (AHA) and used them to structure initial conversations about the core competencies and outcomes. But the AHA statements were not the sole directing factor, and the Utah historians developed their own outcomes in relation to them. The key here is to strike a balance between the resources that professional associations can provide and the autonomy of the work group to consider those resources and add or subtract from them as they see fit.

*In short*, Tuning work groups must give some attention to professional standards documents. But Tuning does not seek to supplant them. Rather, Tuning seeks a complementary product that makes explicit for students what they need to learn and what they will be expected to do to demonstrate that learning.

**Step Two: Map Career Pathways**

Mapping career pathways is a matter of determining the various career pathways open to graduates in the discipline or field. As noted in the process overview below, mapping career pathways serves two important functions.

**First**, for the central goal of completing the Tuning process, mapping career pathways serves to identify the stakeholders who are outside of academia. That identification facilitates Step Three, in which those stakeholders are surveyed regarding Tuning competencies and learning outcomes. For this goal, generating lists of specific employers facilitates the work of Step Three.

**Second**, and equally important, mapping career pathways produces a clear picture of the employment landscape for graduates in a given discipline. Having that picture in place can enable more effective advising and career planning for students as they choose majors and complete their degrees.

**The Process**

**A. Identify recent career fields and recent employers**

Successfully mapping career pathways depends on thorough research into where graduates have gone with their degrees in previous years. Regardless of how groups approach this step, it is important that they remember to include graduate programs in their consideration of employability. While graduate programs are not technically employers, they do function as a frequent “next step” in student career pathways.
This research can be performed in a variety of ways:

1. General faculty awareness: faculty members in every discipline have a general sense of the career pathways taken by their degree-holders. Simple brainstorming in the Tuning discipline group will often generate a respectable initial list.

2. Anecdotal reporting through known students: members of work groups who have maintained contact with former students can survey those students. This approach obviously generates a small reporting base and so results will likely still be incomplete.

3. Advisory boards: in some disciplines, departments have outside advisory boards that can be consulted for information about the different career paths graduates take within that degree-field or industry.

4. University supported research: colleges and universities that track graduates can provide information regarding graduates' employment in the few years immediately following degree completion. Alumni associations sometimes maintain such data and can potentially facilitate contact with graduates so that surveying can be done.

5. Professional associations: some professional associations maintain data regarding the employment paths of the discipline's graduates. Association websites will often provide this information.

Figure 4.3 provides an example of an employability map that was produced by one of the engineering groups in the Texas Tuning initiative. (See Appendix 6 for the full array of the Texas graphic presentation forms.) It provides students with a simple diagram that displays the various career paths opened to them by pursuit of the degree.

For disciplines that have broad professional utility, such as those in the humanities, discipline-specific Tuning groups may also find it helpful to determine the sorts of careers that are available within the identified industries and agencies.
Step Three: Consult Stakeholders

The process of consulting the various stakeholders regarding initial drafts of competencies and outcomes serves as recognition that higher education serves multiple purposes. In addition to the notion of “knowledge for knowledge’s sake” that many faculty value, higher education produces contributing members of our society. Consulting the stakeholders in these sectors ensures that the discipline groups have an opportunity to incorporate their different perspectives on what students should know and be able to do. To do so recognizes the complex mission of higher education.

Another part of the mission focuses on developing career orientation for prospective graduates. Because students hope, ultimately, to carry their degrees into the workforce, it is important to consult potential employers for their perceptions of how outcomes match entrance needs in the field.

What both these parts of the mission have in common are students. Because students are the focus of the Tuning process, it is important to consult them, too. In this instance, both current students (undergraduate and graduate) and alumni, including recent graduates, should be consulted.

What you ask each of these groups may be somewhat different (and will be discussed below), but there are some general questions to consider about how and what information will be collected.
Considering Consultation Methods

Stakeholder input can be gathered in any combination of four ways: mailed or emailed surveys, focus groups, and focused conversations. The approaches will offer the discipline Tuning group different types of results, but in each case, the faculty will need to interpret the meaning of them for feedback put towards their revisions.

**Mailed surveys** have the potential benefit of offering a broader base of response and thereby a more representative sample of perspectives. A significant drawback, however, can be the difficulty of actually getting responses submitted as recipients of surveys often fail to respond due to disinterest, lack of time or just plain forgetting.

**Electronically-delivered surveys** utilize web-based tools, such as Survey Monkey. A digital approach tends to result in a higher return than the mailed surveys, and is therefore recommended.

**Focus groups** can provide substantive feedback with the opportunities for expanded responses that conversation affords, even if those conversations necessarily limit the size of the survey group. The dynamics of larger focus groups tend to result in conversation that does not get as deep, yet yields excellent information.

**Focused conversations** are similar to focus groups, but they are held between only a member of a Tuning work group and a representative stakeholder. The one-on-one nature of the conversation can generate in-depth feedback where the larger size of a focus group might limit responses. The reduced size of the sample surveyed, however, risks limiting the representation of the feedback gathered.

Writing the Survey Questions

The surveys that work groups develop are aimed at gaining feedback on the competency and outcome statements written in the first step of Tuning. **One or a combination of two approaches can be used:**

| 1 | Numeric scale surveys will produce evaluation results by which the Tuning work group can determine how well their statements reflect colleagues’ expectations. Results of numeric scale surveys are easier to compile, but interpretation is more difficult. |
| 2 | Discursive comment surveying will produce qualitative results with potentially more substantive feedback and advice. Results from discursive comment surveys can take more time to process, but they yield more easily interpreted information. They are also more likely to be left blank than numeric scales or multiple choice. |
A combination of these two approaches allows the survey administrator to receive both the types of result to guide revision and suggestions for how to proceed with that process.

Tuning groups may also wish to ask how strongly stakeholders feel that degree programs are succeeding in terms of student accomplishment of the competencies as written. While this information may not be relevant to the revision process for competency and outcome statements, it can still benefit Tuning work by bringing attention to outcomes that need special attention as departments consider how they wish their curricula to advance these competencies.

A. Collecting Faculty Input

Faculty may be the easiest group from whom to collect responses. Almost all of the Tuning group’s participants are faculty members with colleagues who can be asked to review the competency and outcome statements. While paper or online survey tools are the most efficient means of obtaining feedback (as noted above) faculty meetings offer an opportunity to hold a focus group.

For faculty, the survey instrument will pose questions about the completeness and appropriateness of the statements as they have been drafted. Faculty respondents or focus group participants will need to give feedback on the appropriateness of statements in relation to the different educational levels, too.

Remember that the Tuning initiative is intended to identify the core of a discipline, not the myriad possible variations of larger curricular interests. It will be helpful to introduce the group’s statements in that context so that the respondents do not confuse the effort to create basic reference points with an initiative to standardize curricula.

B. Collecting Employer Input

The list of employers developed as a part of Tuning’s second step can be used to identify specifically who might be surveyed in Step Three of the Tuning Process. Work groups will benefit from being thorough as they:

Identify potential recipients of surveys;
Locate likely contacts within recipient agencies;
Gather recipient contact information.

If your discipline Tuning group is working in a discipline with departmental advisory boards, such as nursing, then you may also find that these boards offer opportunities for pre-defined focus groups or survey pools. Each group participant may want to consider contacting their board to raise this possibility early in the process so that the boards are prepared to be of assistance.
The survey instrument for potential employers will pose questions about the relevance of the competency and learning outcome statements to professional workplaces. In this context, appropriate and complete refers to an applied situation in which students will translate their learning competencies into practical uses. The focus here is on learning the degree to which hiring groups feel the competency and learning outcome statements reflect their needs as potential employers.

C. Collecting Alumni Input

Most alumni are in a position to respond to the competency and outcome statements from the perspective of disciplinary practitioners. Locating alumni, however, can be challenging. Remember that alumni associations may be able to provide contact information sorted by major.

The survey instrument for alumni will pose questions regarding the importance or relevance of the statements to professional application. Alumni who are employees in their field of study can evaluate the competency and outcome statements based on their professional experience.

D. Collecting Student Input

Students, since they are currently enrolled and tend to be looking toward the job market, are in a unique position to offer feedback on the competency and outcome statements. Past Tuning groups have used a combination of paper surveys distributed in undergraduate classes and online surveys sent to graduate students, but, as with employers and alumni, each Tuning group will need to determine the most appropriate means to survey their students.

The survey instrument will pose questions similar to those used in the other surveys, but these will focus on the degree to which the competency and outcome statements reflect student expectations. (Note that asking about the degree to which the statements reflect student experience would shift the survey toward program evaluation.)

For upperclassmen and graduate students, the Tuning group may also wish to ask students to evaluate their articulation of the competency and learning outcome statements in terms of the different degree levels. As the individuals closest to those transitions, they may have special insight into what student needs are in terms of foundational and advanced learning.

Step Four: Hone Core Discipline and Learning Outcomes

In Step Four, the core competencies and outcomes are revised in response to the results of the surveys and focus groups completed in Step Three. The process of incorporating the stakeholder feedback recognizes the faculty role in preparing students for other stages in their lives as professionals, as well as employer needs and student expectations. This step is largely a matter of revision in light of new information. The key challenge in this phase is interpreting the results of the surveys and focus groups. A well-designed survey instrument or set of focus group questions will make this process easier, so to some extent success in Step Four depends on completing Step Three well.
Step Five: Draft Degree Specifications

A degree specification is a succinct statement of a particular Tuning group’s work as it relates to specific degree programs. Think of the drafting of a degree specification as the nexus between the Tuning process and the group members’ home departments.

Thus, if the group includes ten members from ten different institutions, then the net result will be ten or more different degree specifications, depending on how many different degrees are offered by the various home departments. A group member who teaches at a community college will likely write only one degree specification, detailing the associate degree in that discipline, whereas a group member at a four-year research institution will write one degree specification for each of the degrees given – B.A./B.S., M.A./M.S., and Ph.D.

The degree specification features five elements of a degree track:

| Purpose | Characteristics | Resulting employability | Education style | Program competencies and learning outcomes |

The degree specification identifies how the Tuning group’s work manifests uniquely in each institution with these five elements. But, as Tuning aims at defining reference points and not at standardizing education, then the degree specifications are where that individuality is made explicit. The list of the specification’s elements above includes the Tuning group’s work, but it also has spaces in which each institution paints its own unique self-portrait. The composition of those five elements in the degree specification might be seen as deriving from three inputs, as Figure 4.4 represents:
The program competencies and learning outcomes should be viewed perhaps slightly differently. Because the work of Tuning has been to ensure that any student completing a given degree does so with the same core learning, it is important to include the competencies and learning outcomes developed by the Tuning work group. If a department believes that there are additional important competencies or outcomes beyond the core, those should be included, too.

The primary audience for the degree specification is students (and perhaps their families), so it should be aimed at providing them with the information they need to understand the degree in general, the department’s specific approach to the degree, and the expectations for those undertaking the degree.
Equipped with the degree specification, graduating students are also able to articulate what they know and can do. That makes potential employers a secondary audience. They may benefit from having a clear understanding of what knowledge and skills students bring to them as potential employees.

Thus, a well-written degree specification can enable students to make informed choices about majors, understand what will be required of them, and communicate to potential employers what they know and can do. A well-written degree specification should:

- Be readable in just a few minutes;
- Provide a clear impression of the specific degree; and
- Give some detailed information where necessary.

The degree specification also represents the first move of faculty work group members back towards their individual institutions. As such, the specification marks the pivot point from the collective work across institutions to the work of implementation that happens at the level of individual departments, which is the subject of the next chapter.
Checklist

Step one: Define the Discipline Core

- Identify competencies
- Draft general competencies
- Draft discipline-specific competencies
- Identify learning outcomes
- Draft learning outcome statements

Step two: Map Career Pathways

- Identify recent career fields
- Identify recent employers, including graduate programs

Step three: Survey Stakeholders

- Collect faculty input
- Collect employer input
- Collect alumni input
- Collect student input

Step four: Revise Core Discipline and Learning Outcomes (in response to feedback in step three)

Step five: Draft Degree Specifications Include:

- Purpose
- Characteristics
- Resulting employability
- Education style
- Program competencies and learning outcomes
Application of Tuning

Chapter 05
Chapter 5: Application of Tuning

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Application at the Local Level

Tuning, as a process, drives towards producing the degree specifications, which explicitly articulate what students should know and be able to do by the end of a degree track. The degree specification has the potential to inform both students and prospective employers, but few benefits can be reaped unless the Tuning efforts inform faculty practice.

It is worth observing that the degree specification, a document that offers a portrait of what a department looks like, is drafted before any real application of Tuning in a department. The point here is that application aims at helping faculty in a given department be more aware of its own collective identity as expressed in the curriculum that defines it—and that it defines. The degree specification, therefore, will ideally be the starting point for a process of application, since it combines the competencies and outcomes alongside the departmental portrait.

The degree specification serves as part of a recursive process of Tuning, in which faculty members engage (as they already do) in a process of curriculum evaluation and revision. What might in some instances make the application of Tuning different is the inclusion of the core competencies and outcomes. Figure 5.1 represents the process:
The process represented in figure 5.1 is recursive, because it assumes that the curriculum exists within a dynamic environment, and that it may need to change over time to respond to changes in mission, technology, or other such factors. Additional feedback from colleagues, students, and employers may suggest the need to further revise or update the curriculum.

The fundamental truth that needs to be kept in mind throughout the application process, however, is that every department has its own unique circumstances that will shape the process and its results, as represented by figure 4.4 in the preceding chapter. That distinctiveness should be acknowledged. The motto developed by our European counterparts has been, “Tuning of educational structures and programmes on the basis of diversity and autonomy.” The application of Tuning’s results at the local level is where that respect for “diversity and autonomy” finds its fullest expression.

Because of the essential need to preserve diversity and autonomy, this section on implementation and application is not intended to direct or structure efforts, but merely to provide suggestions on how a department might proceed. IEBC has more than a decade of experience in making changes at the local level and can provide support throughout the process.

This section of the guide will provide a brief discussion of the two directions in which a department can begin to apply the results of Tuning. The first looks outward, towards maintaining the collaboration that was begun in the Tuning work group, by building partnerships. The second looks inward, towards evaluating and perhaps even revising practice within the department to better provide for student success.
Building Bridges

Tuning, by its very nature, creates collaboration. Colleagues, from two- and four-year, public and private institutions, work together to define core competencies and outcomes, and engage the employers to whom they send their students. These partnerships can become an important part of ongoing efforts to improve student success in the academic environment and beyond.

Two areas in particular stand out as having obvious potential:

- Transfer and articulation between two-year and four-year institutions
- Student internship development

Transfer and Articulation

One outcome of the Tuning process can be improved transfer and articulation processes between two-year and four-year institutions. In fact, at least three of the five states that first engaged in Tuning cited this issue as the instigating factor that led them to Tuning. As should be clear from this guide, transfer and articulation are not a specific goal of Tuning—but institutions are well-positioned to tackle that issue once they complete a Tuning initiative. Texas, for example, asked their work groups to draft course descriptions for lower-division classes. These descriptions grow from the competency and outcome work the faculty participants completed and are included in the state’s community college course catalogue. That approach has enabled Texas to simplify transfer and articulation processes greatly, and to clarify learning outcomes for students taking the same course at any community college in the state.

Of course, each state’s higher education system functions differently, so what worked for Texas may not work elsewhere. The point is that the writing of core competencies and outcomes within a discipline allows transfer and articulation to occur on the basis of what students know and are able to do. It removes some of the uncertainty that comes with basing transfer and articulation on vague course descriptions or random course numbering systems. The application of Tuning to this issue essentially causes transfer and articulation processes to reflect different levels of student learning. (See Appendix 9 for sample transfer and articulation student resources.)
Internship Development

As part of Tuning, work groups solicit input or feedback from the employers to whom they send or to whom they might send their graduates. If part of the educational mission is to equip students with the knowledge and abilities to embark on successful careers, then the contact made with potential employers may lead to experiential learning opportunities for some students.

Internship experiences are among the high-impact educational practices listed by the Association of American Colleges and Universities (AAC&U). By nurturing the relationships that may have been initiated in focus groups and surveys, academic departments can begin to develop internship opportunities for their students. Internship experiences can enable students to make connections between their studies and work-place applications.

Creating these opportunities for students requires continued partnering with the potential employers as well as consideration within the department of how the internship fits the curriculum. For example, what sort of response will the interning student be asked to make regarding the experience? How will the interning student’s experience be supported within the academic department? These sorts of questions need to be addressed to assure that students maximize the learning potential of the internship.

Working Collectively in Home Departments

Taking Tuning home opens the opportunity for a department to take stock of itself, to think and talk about how its particular configuration provides students with the knowledge and skills that the faculty strives to impart, and that students can apply at the next academic level or in the workplace. The department’s Tuning group representative(s) will necessarily be in a leadership role for this initiative, since that person will have worked through the overall process and will understand its aims most clearly. Thus, a measure of strong leadership from the departmental chair can be an important component to success.

If the department’s Tuning group representative has been keeping colleagues informed of the work being done all along, and if there was some departmental collaboration in the drafting of the degree specification, then those conversations are likely already under way and need only to be given some shape by means of departmental protocols. (This is where a chair’s leadership can be helpful.) If those sorts of ongoing updates have not happened, then the representative to the Tuning group will need to initiate them, again, through whatever local protocols are best.

The process undertaken by the Tuning work group provides a model for the sorts of work to be done towards implementation in the home department. The Tuning groups work through conversations that define priorities and make them explicit. That same approach will benefit the work in a department, since it encourages a collective, collaborative effort. These conversations can create an exciting time for a department, one in which problems with the curriculum are identified and solved, strengthening the department overall.
Starting from the End

Tuning provides not just a process for defining the core of a discipline; Tuning also establishes an approach to improving the educational experience of students. That approach hinges on faculty using their expertise collectively to define what the results should be for learners. Tuning, thus, starts with the end goal: it defines what students should know and be able to do at the completion of a degree.

The approach also depends on faculty working together, pooling their expertise in conversation to arrive at the strongest possible result. In effect, then, Tuning asks the faculty to reinvent the discipline by making its vision explicit.

After Tuning groups initiate the process towards the completion of competencies and outcomes, then the process continues with department faculty following a similar approach to strengthen their particular expression of those competencies and outcomes. The basic idea behind both the Tuning group and departmental implementation work is that the faculty works to make explicit what it collectively believes to be essential, through conversation or exploration.

What makes implementation different from the initial stages of the Tuning process is that a department’s faculty will take the end goal (the competencies) and then clarify or build the structure necessary to bring students to it. The history department at Utah State University, for example, started their conversations around their senior capstone course, working to identify goals for the class and, based on those goals, then determined how the curriculum needed to be revised to prepare students to meet those goals. (See Appendix 10 for sample materials from Utah State’s History Department application of Tuning.)

The shape of any department’s particular discussions might start in a similar place, but not necessarily. Again, the specific circumstances of a department will determine the exact nature of their conversations. If a department is unclear as to where to begin, here are some starting points to consider:

Familiarity with the Purpose of Tuning

The department may need to become familiar with the Tuning group’s competency and outcome statements, because to work productively on the implementation of Tuning, colleagues need to understand Tuning’s aims and results. That foundation enables the department to work collectively from a shared understanding. How you generate that familiarity might range from simple e-mail correspondence to a report at a department meeting to a discussion of the document in a faculty forum.

Identifying Competencies and Outcomes in the Curriculum

Since the competencies and outcomes state what is believed to be a shared core of a discipline, it stands to reason that most, if not all, will be present in some form in the existing curriculum. Your department may find it useful to examine its course offerings to determine precisely how they address the core competencies and outcomes. Where, for example, does each competency get addressed and each outcome assessed? A department’s faculty can also identify further competencies and/or outcomes that it believes to be important; doing so contributes to the distinctive character of that program.

Establishing Outcomes/Competency Levels

Tuning groups assign different levels to the outcomes within the various
competencies, suggesting that what a student knows and can do at the end of two years is different from what a student knows and can do after four years. Thus, departments may want to consider how the existing curriculum addresses those different levels. In effect, this conversation might examine what second-year coursework expectations are versus third- or fourth-year coursework expectations.

Curricular Innovations

When the curriculum appears not to address a competency or outcome sufficiently, the department’s faculty may wish to explore new ways of incorporating competencies and/or outcomes. Changes might be made to course sequences, course requirements, or assignment types. Additionally, some consideration might be given to how major and general education programs can be made to work together more productively.

Improving Communication with Students

If one of Tuning’s benefits is the way it clarifies for students what they are learning, then the department may wish to discuss ways to help students access that information and articulate what they know. The department faculty can devise strategies for familiarizing students with the Tuning competencies and outcomes, and paths to achieving them, whether they be through curricular modification or changes in existing department-student communication structures.

This list of potential directions for conversation is general by intent, since, as noted above, the particular circumstances of a given department will cause the implementation of Tuning to take its own unique form. While this list is by no means comprehensive, the first two items will likely be important components of whatever approaches you might use. They will build a foundation on a common understanding of the competencies and outcomes, as well as on a shared sense of the ways in which the department works toward them.

These five topics are offered simply as possible directions that might be taken. Each of them points to either deepening understanding of existing structures or adjustments and refinements to those structures to better help students attain the goals set by the Tuning competency and outcome statements. Other possibilities will, no doubt, present themselves as individual departments consider their own circumstances.

Innovating Practice: Some Examples

The degree specification provides the basis for innovating how a department interacts with its students and helps to ensure their learning. It simultaneously describes the distinctive character of the department and what its faculty endeavor to teach to its students. The degree specification, thus, can be used as an initial tool for helping students understand what the major is about. It can be posted on a departmental website or distributed in a variety of other ways to explain the major clearly for students within and outside the department, as well as employers and other stakeholders.

However, you may find that Tuning leads to other initiatives that promote student success. Some departments that were represented in the initial Tuning pilots found that, through their conversations, Tuning and the degree specification could be extended into changes in departmental praxis. Some of those changes are small and others large. What follows is a list of strategies, some of which were developed by departments in the early Tuning initiatives.

Handbooks for Majors

Because the degree specification offers a succinct statement of what students should know and do, as well as how the department approaches student learning, departments may find it useful to expand the specification into a handbook for majors. These larger forms can help students by explaining more fully the purpose of the degree, as well as its characteristics, educational style, competencies, and outcomes. Handbooks can also review curricular structure, explain course requirements, and make suggestions concerning what general education courses might best support the major.
Departmental Rubrics

The principal of making expectations clear to students by identifying what they should know and be able to do after successful completion of a given degree can be extended into departmental practice by developing rubrics that identify for students what successful assignments will do as opposed to less- or unsuccessful assignments. The development of rubrics makes explicit what students must achieve on specific assignments. In practice, clear rubrics can change the way students use office hours from complaining about grades to trouble-shooting, making office visits more productive. In the initial pilot of Tuning, one department developed rubrics that identified clear expectations for assignments at each level. The rubrics were organized around the competencies and included the outcomes, where each was relevant to the level of the assignment.

Pre-Major Programs

Identifying what students should know and be able to do at set stages in an educational experience can lead to a clearer sense of prerequisite requirements. Departments can consider what they believe students need to know and be able to do as they prepare to enter and progress through the major. Doing so may result in a more clearly defined pre-major program that sets out lower-division coursework and that can even guide students through general education offerings.

Dealing with Possible Objections

Even with the most supportive and collaborative colleagues, it is likely you will encounter some objections to bringing Tuning into the department. It is inevitable. The reservations will likely be similar to those that members of some Tuning groups had in the earliest stages of the initial initiatives.

It may be helpful to bring possible objections into the open. Below are several of the common objections you may encounter.

Tuning is just another assessment initiative.

Assessment is indeed part of Tuning, but Tuning aims for more. Tuning aims at increasing student learning and success, at raising the quality of the education students are given. Those efforts derive from faculty’s role in defining the standards and, in the process, potentially increasing the standards to be met by students. Without some form of assessment, there would be no way of identifying the degree to which students are meeting those standards.

In addition, assessment is a standard practice in every faculty member’s classroom, whether the form of assessment is essays, quizzes, multiple choice tests, written exams, presentations, or some other means. Tuning does not attempt to stipulate some universal form of assessment. Tuning simply asks faculty to be as explicit as possible with students regarding what is expected of them, that clear criteria for evaluation be communicated to them, and that the means of assessment be appropriate to what they have been asked to do. (You would not, for example, want to give students a multiple choice exam for a capstone initiative if your aim is to assess the ability to research and compose an analytical argument.) Most faculty are already doing this, but Tuning asks for a reflective pause to consider the degree to which the assessment tools being used are clear and appropriate.

Tuning’s implicit approach to assessment is that it comes from a bottom-up effort in which faculty set the terms rather than administration or accrediting agencies. Assessment is often perceived as a top-down initiative, but Tuning inverts that perception so that faculty defines the basis on which students will be assessed based on the particular demands of the given discipline. Only experts in the field (faculty) are in an informed position to make such judgments.
This initiative intrudes on academic freedom.

This objection is an important one, since part of what defines higher education is the freedom of faculty to pursue research where the evidence leads and to instruct students as their expertise deems best. Tuning honors the role of faculty as discipline experts.

Tuning recognizes the stunning diversity of interests and approaches that comprises a field of study. As has been mentioned throughout this guide, Tuning embraces that diversity by asking faculty to identify what they believe to be the core of a discipline, leaving all that surrounds that core to be determined by individual departments and faculty members. Implementation of Tuning does not seek to flatten individual departments’ distinctive identities or faculty members’ particular styles. Rather, implementation of Tuning asks the members of the faculty to investigate what they hold in common with all the other members of a discipline or practitioners in a field. Tuning encourages members of a department’s faculty to find out what they share, despite the plurality of interests and approaches.

Assuming a great diversity, Tuning asks, what do biologists or historians, for example, all do in common? What do biologists or historians all want their students to know and be able to do? Tuning identifies a framework of expectations that accommodates all the individual and distinctive enterprises and interests. Once that framework is established, faculty will need to consider how to help students to meet those expectations. That may lead towards some conversation about what sorts of assignments and assessments are best suited to helping students toward that goal and most effective in identifying their level of proficiency.

This sounds like curriculum review and revision.

Application of Tuning does, in fact, point to a potential revision of the curriculum. Once Tuning identifies a discipline’s core competencies and resulting learning outcomes, then consideration of the degree to which a curriculum facilitates that learning may necessitate revision to align the curriculum with what the faculty have agreed are the essential competencies and outcomes. The degree to which any given department revises its curriculum, however, is up to its faculty and can range between two poles:

Curricular articulation: the department discusses how the existing curriculum facilitates the learning identified in Tuning as core to the discipline (not to mention any additional competencies/outcomes the department may have included). The result may be a reframing of how the curriculum is presented to students.

Curricular revision: the department identifies the extent to which the curriculum may be misaligned with the list of competencies/outcomes and reorients the curriculum to meet both the needs identified by Tuning and the needs faculty believe to be important to any additional competencies/outcomes included.
Tuning reduces the work of research and scholarship to employment skills.

This objection signals the commitment of colleagues to preserving the life of the mind and not conceding to the demands of the marketplace. Asking for the opinions of potential employers can seem to be making such a concession, but that is not what Tuning seeks. It is not an either-or situation.

It is true that Tuning invites input from potential employers, but Tuning does not give that body of stakeholders either an authorizing role or veto power. They are simply consulted as significant figures in students’ futures. As such, it is important that faculty understand what employers want students to know and be able to do.

Tuning assumes that the cultivation of intellect develops applicable knowledge and skills. If asked, most faculty can make a strong case for how a discipline prepares students for life out in “the real world,” for how it equips them with knowledge and abilities that will help them in their professional lives. Tuning asks that faculty consider this in order that students can better understand what the applicable skills and areas of knowledge are.

Some concerns are inevitable, but concerns can form the foundation for stronger collaboration among colleagues if they are discussed explicitly. If concerns do arise, remember that not all faculty will be equally open to the goals of Tuning, for whatever reasons—and some of them may be good. They may have other ideas or observations that never arose in the Tuning group.

Open conversation, making assumptions explicit, and striving for clarity, however, may help in working with colleagues to find the common ground that Tuning seeks from the beginning. That common ground may not be identical to what was envisioned by the Tuning work group, but remember that no two departmental contexts are the same. Space needs to be given for distinctiveness to shape the final results.

What does our discipline do? What do we want students to know and be able to do? What must we do to help them get there? How can we encourage them to reach those goals? Those are the key questions to keep in the forefront. Raising those questions can initiate an exciting—if challenging—time for a department, because attention is focused on helping students to learn what faculty often lament that not enough of them are learning.

Departments often have some experience with similar processes, either self-initiated or in response to processes of accreditation, so departmental procedures may already exist. If a department encounters uncertainty regarding how to proceed, IEBC can provide facilitation, support, and guidance through the process of applying the results of Tuning at the local level.

Checklist:

- Initiate conversations in home department about the degree specification
- Take stock of departmental strengths
- Determine impact of institutional mission
- Consider how the department wishes to augment the core competencies and outcomes
- Review the curriculum in relation to the core competencies and outcomes
- Determine where the existing curriculum targets specific competencies and outcomes
- Revise/refine the curriculum to include all identified competencies and outcomes
- Explore internship partner opportunities
- Review transfer and articulation agreements with partner institutions
Appendices
Appendices
Appendix 1: A Short History of Tuning

The European Origins of Tuning

History of the Bologna Process and Tuning

Higher Education throughout Europe in the 1990s was not a unified system. Degrees and academic credits did not translate across country lines, causing students and graduates to become stuck where they went to school. In response to this situation, and in an effort to make European universities more globally competitive, higher education ministers from 29 countries came together on June 19, 1999 in Bologna, Italy to sign what would become known as the Bologna Declaration. The Bologna signatories vowed to create a European Higher Education Area (EHEA)—to do for higher education in the European Union what has already been done for currency, a unified bank, and the common market.

Countries participating in the EHEA would streamline their higher education systems in terms of degree cycles (degrees offered and the number of years required for each), academic credits, life-long learning, accessibility for disadvantaged populations, quality assurance (analogous to accreditation), and other Bologna “action lines.” Eleven years later, the EHEA has been officially established, the number of countries participating has grown to 47 out of a possible 49—including all 27 in the European Union—and Bologna’s action lines have been implemented with varying degrees of success.

One of those action lines, the “tuning” of degrees by discipline to make their expectations clearer to students and more in line with workforce needs, has been adopted by 18 countries in Latin America and recently in the United States, as the Lumina Foundation’s Tuning USA initiative.

The Bologna Process, as the reforms defined in 1999 came to be known, came about during a time of sweeping change in European higher education, picking up on reform momentum that had already been building. Participants were already familiar with Bologna themes.

Bologna reforms are not enforced as policy or mandate. True to the original declaration, countries participate voluntarily, though they do feel pressure to do so. To participate, a country must 1) have ratified the European Cultural Convention of the Council of Europe (1954) and 2) provide written evidence of their commitment to the Bologna Process’s goals.

Every two years, representatives of each Bologna country gather for a “Joint Ministerial Meeting and Communiqué” to report on progress, and to discuss new and on-going implementation strategies. The smaller Bologna Follow-Up Group (BFUG) meets twice per year and develops the themes for the Ministerial Meetings. The BFUG is co-chaired by the country holding the presidency of the European Union that year and a representative of a non-EU country (alphabetical, starting with Albania in 2010). Meetings have been held in Prague (2001), Berlin (2003), Bergen (2005), London (2007), Leuven (2009), and Budapest-Vienna (2010), this last a special Anniversary Conference in which the EHEA was officially launched. The next Ministerial Conference will be held April 26-27, 2012 in Bucharest, Romania.

At the 2010 Ministerial Meeting, after taking stock of the Process’ progress in terms of its original goals as laid out in the 1999 declaration which were planned to be met within ten years, the Bologna Ministers of Education agreed to revise the goals and expectations of the Process, setting a new date of 2020 for many of its benchmarks.

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11 Adelman xxi
12 Reichert slide 10
13 Adelman 21
14 Ibid.
15 Reichert slide 4
16 Ibid.
Mobility, the ability of students to move between universities across country borders, is one of the key Bologna action lines. Before Bologna, students had trouble moving across borders because foreign transcripts were not always recognized, and national funding systems tended to reward universities that retained students. As part of the mobility effort, Bologna has sought to even out degree cycles across the EHEA, introducing a three-degree system similar to that used in the United States (bachelor's, master's, and doctoral). This has required extensive reform in some participating countries, especially those that historically offered a single degree (e.g., Germany and the Netherlands). Students have tended to be the strongest critics of some of Bologna’s mobility reforms.

Germany had used a basic five-year “Magister’s degree” system previous to the implementation of Bologna reforms. The introduction of a new 3 + 2 system, with a new bachelor’s degree, led students to hesitate to enter the workforce with just the new bachelor’s degree, as employers were unsure of how to value it. Students also found that curricula were being compressed, leading students in both Germany and Austria to complain of “factory-like” learning conditions. Student mobility actually decreased, as they felt compelled to stay in Germany to finish their degree and enter the workforce. In 2009, these issues fuelled riots in Germany and Austria. Peter van der Hijden of the European Commission claims that the problems in Germany stemmed from bad implementation of the reforms, while the administration in that country has blamed the reforms themselves.

Credit transfer is another Bologna issue that is linked to degree cycle and mobility reforms. The European Credit Transfer and Accumulation System (ECTS) existed prior to Bologna, but had not been used for credit accumulation purposes before the 2003 Ministerial Meeting. Making credits more easily evaluated and consistent across borders has been one of the Bologna Process’s successes, although only two-thirds of European institutions have adopted the ECTS.

Students are not the only group to have criticized the Bologna Process. David Coyne, a former education expert at the European Commission, says that the biennial Ministerial Meetings have tended to produce new communiqués without scrutinizing what has already been done. Implementation has been weak in some cases, says Jo Ritzen, president of the University of Maastricht in the Netherlands, because countries have tended to nationalize the process and have not been guided by a centralized agency.

The Tuning process, in which faculty collaborate on degree competencies, in an effort to make expectations clearer to students and degrees more in line with workforce demands, has been taken up by more than 100 universities in Europe. European faculty in Bologna institutions started the Tuning process in 2000, in response to the Bologna Process, and it has since become a central aspect of Bologna. Adelman points out that Tuning is the one area of Bologna where faculty can affect reform themselves. Tuning is also the Bologna action line that countries outside of Europe have adopted, in Latin America and more recently in the United States.

Higher education observers in the United States first took note of Tuning in 2008, when the Lumina Foundation sponsored the publication of Clifford Adelman’s The Bologna Club monograph. The Bologna Club and its revised version published in the spring of 2009, The Bologna Process for U.S. Eyes, were widely disseminated across the American higher education landscape. Adelman warned readers that universities in the United States were no longer at the international pinnacle of higher education, and argued that Tuning was one aspect of Bologna that the United

Appendix 01 A short history of Tuning

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20 Adelman 173
23 Dempsey 2
24 Labi 4
25 Adelman 21
26 Adelman 22
27 Qted in Labi 3
25 Adelman 21
26 Adelman 22
27 Qted in Labi 3
Appendix 01 | A short history of Tuning

States needed to take on. The United States had slipped to the bottom of the international rankings in terms of graduation rates, yet was at the top in terms of expenditures per student.

At the same time in the spring of 2009, Lumina formally launched Tuning USA, as part of their “Big Goal” of increasing the number of American college graduates to 60% by 2025. Lumina first piloted the initiative in six disciplines in Indiana, Utah and Minnesota, to determine Tuning’s potential in United States contexts. In 2009-10, Tuning USA moved into a second phase, as Texas and Kentucky were brought on board for the first official round of Tuning USA. Also that year, Lumina partnered with the California-based Institute for Evidence-Based Change (IEBC) to provide leadership and logistical support to the initiative. The Hewlett Foundation also joined the initiative that year as part of its “Deeper Learning” initiative. With guidance and support from Lumina and Hewlett, IEBC will be tuning in other states and organizations in the coming months and years, and hope to one day establish a national Center for Tuning.

Where and what has been Tuned in the US – toward a methodology for Tuning

Minnesota, Indiana and Utah were the first three states to engage in Tuning and their methodology, though similar in many ways to both later states Texas and Kentucky, was also different. All three pilot states sent representatives to a kickoff meeting in Chicago hosted by Lumina. Each group then retreated to its own state to work through the process.

In all three of the pilot Tuning states, there had been interest in making transfer more transparent to students, parents and the public and to align curricula within majors and across institutions so that students could transfer from one institution to another within the state without losing credits or having to repeat coursework. There was the caveat to the Tuning process however: that there should be no loss of individuality in the way a faculty member approached teaching the course.

The following disciplines were tuned in the three pilot states: Biology, Chemistry, Graphic Arts, History, Elementary Education, and Physics. The first wave of tuning in Texas involved all permutations of mechanical engineering; the second wave is engaged in tuning all of the Bio Medical Engineering/science areas: Biology, Chemistry and Bio-Chemical Engineering. Kentucky is working with five disciplines that have not been tuned before except for one: Biology, Business, Elementary Education, Nursing and Social Work.

Of the three pilot states, Minnesota was/is the only union state and one of its chief findings about the process is that there was not enough time to work with all the stakeholders. This may have been because the time line was a bit shorter for the first group but it may also reflect the reality that when there are more stakeholders, as is the case in a union state, planners need to allow for more time to make sure that everyone is comfortable with the process and that whatever agreements need to be created are done before the process begins.

Transfer from two year to four year schools in Minnesota had previously resulted in students losing credits. The Minnesota Legislature had passed laws to make the transfer of credits easier across the segments by creating the Minnesota State Colleges and Universities. This collective group of institutions worked jointly with the University

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28 Labi 3
31 Adelman 184
32 Adelman ix
33 Birtwistle slide 4
34 Adelman viii
of Minnesota to develop the Minnesota Transfer Curriculum (MnTC) which has eliminated most transfer issues in the lower division General Education area. However, alignment in the majors is still not advanced and it was in the interest of getting better alignment in the majors that brought Minnesota into the Tuning process. “The state of Minnesota was interested in testing whether enabling faculty to meet and work through the Tuning process could enable greater alignment of the core while preserving the unique aspects of the degree requirements that are part of the strength of American higher education.”

The most potent finding in Minnesota was that the Tuning process brought faculty together by discipline from across the varied higher education institutions and that these faculty found that there was the critical, common ground in the discipline which led to increased trust among the faculty that transfer students were prepared to do work at the transfer institution. It has helped the state with articulation issues in these disciplines for the same reasons.

Indiana’s findings also iterated the positive attributes of having conversations across the spectrum of higher education institutions in the state. Equally important, in terms of lessons learned, was the conversation around disciplines that had learning outcomes and competencies spelled out in a variety of ways. For example: the Chemistry faculty adopted the requirements of the American Chemical Society and used those requirements as a base to create their competencies for the discipline and to emphasize the scaffolding nature of the competencies in the study of the discipline.

History, which is not guided by a strong accrediting or professional group relied heavily on work that had already been done by Indiana faculty at one of the higher education institutions. Elementary Education, a discipline which has many state and professional standards to meet legally before the degree may be awarded, had a difficult time developing anything beyond what was already mandated.

In Indiana, the Tuning work was seen as building on the 2008 Strategic Plan by the Indiana Commission for Higher Education that specifically called for “ever-improving quality and accountability, particularly in the arena of learning outcomes, and for international benchmarking.” Additionally, the Commission had called for participation in the Voluntary System of Accountability (VSA) because the VSA included emphasis on articulating Student Learning Outcomes (SLOs). The Tuning USA initiative appeared to complement the VSA process.

Utah, with a long history of having majors meetings, having already defined general education among the eight higher education institutions in Utah, felt that the Tuning process of aligning degree outcomes would complement and extend the work already done in the state.

The Texas Higher Education Coordinating Board (THECB) initiated that state’s Tuning endeavor and has been the lead agency in coordinating the Tuning work. Texas decided to tune the discipline of engineering and began that process with a set of more discrete engineering areas. The large group was convened and their first meeting with each other began

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35 The Minnesota Office of Higher Education Final Report, Grant Number 6142 Tuning Initiative, p. 3.
36 Tuning USA Final Report: The 2009 Indiana Pilot, Revised June, 2010, p. 10
with an overview of Tuning and then breakouts by sub-disciplines. The breakouts were to allow the smaller groups to get to know one another and establish ground rules for how the subgroups would work. The THECB scheduled four face-to-face meetings over a period of a year. All subsequent work was handled using telecommunications. Participants at the initial meeting were provided with cameras that hooked to their computers (if their computer did not have a camera built in) to facilitate meetings held virtually.

Kentucky has used a different combination of face-to-face and telecommunications approaches for the Tuning work. Like Texas, Kentucky did a large state-wide kickoff with leadership for the event provided by the Senior Associate for Academic Affairs at the Kentucky Council on Post Secondary Education. Kentucky leaders chose to have the discipline groups meet face-to-face once a month over a period of five months. In the interim, groups communicated with each other via the web and used Blackboard to post work.

In all of the states, there has been support and encouragement from either the governor’s office and/or the legislature. Additionally, the chancellors/provosts and deans at respective higher education institutions have been supportive of the work. It is important to have the support of these groups to ensure that the work will have sustainability once complete.

What is interesting to note is the process of Tuning, regardless of where, has as its foremost outcome faculty building a greater sense of trust with each other extending beyond their own institutions. This trust has potential to assure that Tuning will continue as an ongoing process and it opens up the possibilities of additional cross institutional work. This sense of trust is not only amongst faculty from across disciplines and institutions but within institutions with deans and administrative staff as well. In an interview with one dean, it was posited that the trust built as a result of the Tuning process has made other institutional processes easier to negotiate with faculty.
Co-Chairs – Discipline Tuning Groups

The following duties are meant as guidelines for the discipline group Co-Chairs. Particular project directors and/or discipline groups may wish to augment these responsibilities to suit particular needs.

At the first convening:

- Have participants introduce themselves
- Review the task at hand
- Identify a person to act as scribe for the group and who will create recollections/reflections of what occurred at the meeting.
- Create contact information list

At recurring meetings:

Facilitate meeting

- Help participants stay focused on the task at hand
- Be inclusive and ensure that all voices are heard and that the meeting is not dominated by a voice or two
- Summarize main points as the meeting proceeds
- Decide on methodology for completing and reviewing initial work (Blackboard, email, telecommunication, etc.)

Prepare for next meeting

- Identify tasks that have been agreed to, responsible participant(s) for doing this work, and time and venue for posting the finished product
- Identify individuals who will find identified source material and post to website or Blackboard for the group
- Summarize meeting accomplishments and action items

After or between meetings:

- Distribute meeting reflections to your members within one week of meeting
- Participate in Co-Chair meetings with the project director and other co-chairs
- Maintain contact with members as needed using electronic sources identified
- Monitor the discussion on the virtual space and create a synopsis of the work posted to the group prior to the next meeting
- Create task list for the next face-to-face meeting and distribute virtually
Appendix 2: Job Descriptions

Project director

The organization or agency initiating the Tuning initiative will select the Project director. The following duties are meant as guidelines for the Project director as s/he works with IEBC and the Lumina Foundation on the implementation of the Tuning work in their respective state.

The Project director will:

- Help coordinate all of the parties involved in Tuning
- State control agencies (when applicable)
- Public and private colleges, universities and community colleges
- Lumina Foundation
- The Institute for Evidence Based Change (IEBC)
- Professional Organizations (if appropriate)
- Oversee all in-state arrangements
- Organize Tuning events
- Set dates
- Contact appropriate faculty groups to ensure representation from across the state higher education institutions for each of the disciplines being tuned

- Identify Co-Chairs of Discipline Tuning group
- Set a time for training Tuning Co-Chairs
- Assist with creation of Tuning Blackboard site to facilitate the work
- Set Agenda (with help from appropriate bodies)
- Identify and confirm speakers
- Facilitate the logistical arrangements (which includes working with the Tuning USA administrative assistant)
  - Meeting Place
  - Food
  - Accommodations
- Provide appropriate follow-up materials to participants once events are completed
- Working with IEBC’s VP for Tuning, create a next steps agenda to maintain forward momentum on the Tuning work
- Provide oversight to the Faculty Tuning Leaders to create a summative state report on the first cycle of the Tuning USA work.
Discipline Tuning Group Participants

The following duties are meant as guidelines for the discipline Tuning group participants. Particular project directors and/or discipline groups may wish to augment these responsibilities to suit particular needs.

At the first convening:

Participate in Tuning workshops

- Introduce themselves to the group
- Participate in initial competencies work
- Provide contact information

At recurring meetings:

- Participate in discipline group discussions in face-to-face and/or web-/tele-conferencing meetings
- Bring materials relevant to the group’s work on competencies and outcome statements
- Collaborate on writing core competencies and outcomes
- Accept (when necessary) tasks to complete between meetings

Between Meetings:

- Maintain contact with co-chairs as needed using electronic sources identified
- Participate in any discussion on the virtual space
- Complete tasks as assigned in meetings, including drafting of outcome statements, administering student surveys, and compiling employer information
- Provide ongoing updates of Tuning work to colleagues in home departments
Assessment Specialist Support

Support specialists may be recruited by the project director to assist Tuning groups complete their work, specifically in Step Three. The following duties are meant as guidelines for such specialists. Particular project directors and/or discipline groups may wish to augment these responsibilities to suit particular needs.

Sit in on discipline group meetings to become familiar with the group’s work. Consult with the project director and discipline group co-chairs about Tuning groups’ survey and/or focus group needs.

Advise the discipline group on goals for the surveys and/or focus groups

- Develop a survey and/or focus group questions in consultation with the discipline group co-chairs
- Administer the survey and/or focus group questions (when necessary) and in consultation with the discipline group co-chairs
- Collate results from the survey and/or focus groups
- Analyze results from the survey and/or focus groups
- Report results to the discipline group
Appendix 3: Sample Initial Stakeholder Communications

MEMORANDUM

January 28, 2010

TO: Deans of Public Colleges and Schools of Engineering

FROM: Raymund A. Paredes

SUBJECT: “Tuning Texas” Seminar – February 26, 2010

It is my pleasure to invite you or your designated representative to participate in an interactive educational seminar about “Tuning Texas” to be held on Friday, February 26, 2010, from 10:00 a.m. to 3:00 p.m. at the Sheraton Hotel in Austin (701 E. 11th Street; Creekside Room). The seminar will be designed to facilitate discussion among Texas Deans of Engineering for the purpose of increasing understanding of and identifying the steps necessary to apply Tuning methodology to specific degree programs in Texas. There will be substantial opportunity for a free exchange of ideas and interaction.

Tuning Texas is one of the components of a partnership agreement between the Texas Higher Education Coordinating Board and the Lumina Foundation for Education and is part of Lumina’s “Tuning USA” Initiative. In April 2009, the Lumina Foundation launched Tuning USA, which is a faculty-led pilot project designed to define what students must know, understand, and be able to demonstrate after completing a degree in a specific field. Tuning USA methodology is based on similar work done in Europe to increase the transparency around what a particular type of degree represents. Named for the city in which it was started in 1999, Europe’s “Bologna Process” is an effort to promote transparency, coordination, and quality assurance among the various higher education systems in Europe. (Please see attached summary information for additional details.) The February 26 seminar is hosted by the Coordinating Board and the Lumina Foundation for Education. While there is no charge for participation, we ask that you register on-line by February 17 at the following website so that we may provide a roster of participants: http://www.thecb.state.tx.us/Events/TuningTexas/Engineering.

A limited block of sleeping rooms has been reserved at the Sheraton for the night of February 25. Grant funds will cover the cost of your hotel room. All hotel reservations are available on a first-come, first-served basis and must be made through the hotel. For hotel reservations, please call [phone] and reference the “College for All Texans Foundation: Tuning Texas group block.”

We hope that you will be available to participate in this important seminar. We expect it to help strengthen our mutual commitment to finding the best ways to move forward with student-centered higher education in Texas. If you have any questions, please contact David W. Gardner, Deputy Commissioner, at [email] or [phone], or Mary E. Smith, Assistant Deputy Commissioner, at [email] or [phone]. We look forward to having you and your colleagues participate in this seminar.

Attachment
January 28, 2010

Francisco G. Cigarroa, M.D.
Chancellor
The University of Texas System
601 Colorado Street, 4th Floor
Austin, Texas 78701

Dear Chancellor Cigarroa:

It is my pleasure to invite you and your choice of three educational leaders from The University of Texas System (presidents, provosts, or assistant provosts) to participate in an interactive educational seminar about “Tuning Texas” to be held on Thursday, February 25, 2010, from 1:00 p.m. to 3:00 p.m. (with lunch from 12:00 noon to 1:00 p.m.) at the Sheraton Hotel in Austin (701 E. 11th Street; Creekside Room). The seminar, to include a limited but balanced number of participants from across Texas public university systems and community college districts, will be designed to facilitate discussion among Texas higher education leaders for the purpose of increasing understanding of and identifying the steps necessary to apply Tuning methodology to specific degree programs in Texas. There will be substantial opportunity for a free exchange of ideas and interaction.

Tuning Texas is one of the components of a partnership agreement between the Texas Higher Education Coordinating Board and the Lumina Foundation for Education and is part of Lumina’s “Tuning USA” Initiative. In April 2009, the Lumina Foundation launched Tuning USA, which is a faculty-led pilot project designed to define what students must know, understand, and be able to demonstrate after completing a degree in a specific field. Tuning USA methodology is based on similar work done in Europe to increase the transparency around what a particular type of degree represents. Named for the city in which it was started in 1999, Europe’s “Bologna Process” is an effort to promote transparency, coordination, and quality assurance among the various higher education systems in Europe. (Please see attached summary information for additional details.)

The seminar is hosted by the Coordinating Board and the Lumina Foundation. While there is no charge for participation, we ask that you and your campus representatives register on-line by February 17 at the following website so that we may provide an accurate roster of participants: http://www.thecb.state.tx.us/Events/TuningTexas/Presidents.

We hope that you and representatives of your system institutions will be available to participate in this important seminar. We expect it to help strengthen our mutual commitment to finding the best ways to move forward with student-centered higher education in Texas.

If you have any questions, please contact David W. Gardner, Deputy Commissioner, at [email] or [phone], or Mary E. Smith, Assistant Deputy Commissioner, at [email] or [phone]. We look forward to having you and your colleagues participate in this seminar.

Sincerely,

Original letter signed by:

Raymund A. Paredes

Attachment
February 10, 2010

Personally addressed to business representatives

Dear *:

It is my pleasure to invite you to participate in an interactive educational seminar about “Tuning Texas” to be held on Thursday, February 25, 2010, from 10:00 a.m. to 12:00 noon (with lunch from 12:00 noon to 1:00 p.m.) at the Sheraton Hotel in Austin (701 E. 11th Street; Creekside Room). The seminar, to include a limited number of Texas business leaders, will be designed to facilitate discussion on how Texas can better prepare students for the workplace and align education with workforce needs. There will be substantial opportunity for a free exchange of ideas and interaction.

Tuning Texas is one of the components of a partnership agreement between the Texas Higher Education Coordinating Board and the Lumina Foundation for Education and is part of Lumina’s “Tuning USA” Initiative. In April 2009, the Lumina Foundation launched Tuning USA, which is a faculty-led pilot initiative designed to define what students must know, understand, and be able to demonstrate after completing a degree in a specific field. Tuning USA methodology is based on similar work done in Europe to increase the transparency, coordination, and quality assurance between business and the higher education system.

The February 25 seminar is hosted by the Coordinating Board and the Lumina Foundation for Education. While there is no charge for participation, we ask that you register on-line by February 17 at http://www.thecb.state.tx.us/Events/TuningTexas/Business so that we may provide an accurate roster of participants.

We hope that you will be available to participate in this important seminar. We expect it to help strengthen our mutual commitment to finding the best ways to move forward with student-centered higher education in Texas.

If you have any questions, please contact David W. Gardner, Deputy Commissioner, at [email] or [phone], or Mary E. Smith, Assistant Deputy Commissioner, at [email] or [phone]. We look forward to having you and your colleagues participate in this seminar.

Sincerely,

Original letter signed by:

Raymund A. Paredes
MEMORANDUM

March 22, 2010

TO: (Individualized Memos for Deans of Public Colleges/Schools of Engineering – One Representative)

FROM: David W. Gardner

SUBJECT: Nominations for Voluntary Advisory Committees on “Tuning Texas” and the Course Alignment Initiative for Engineering

I am writing to invite you to nominate by March 26 a faculty member to serve on one of the four voluntary advisory committees we are organizing to integrate the “Tuning” process as described below into the course-level alignment work that was piloted in 2009 through the efforts of the Voluntary Mechanical Engineering Transfer Curriculum Committee. From your institution, we are seeking a faculty representative with content knowledge in *. The first meeting of the “Tuning Oversight Council for Engineering,” the full council that will consist of these four voluntary advisory committees, will be held on April 20 at the Coordinating Board in Austin. Within certain budgetary restrictions and limits, grant funds from the Lumina Foundation’s Productivity initiative will allow us to reimburse approved travel expenses incurred by committee members in connection with service on these advisory committees.

As you are aware, Texas is one of seven states to receive a four-year, $1.8 million productivity grant from Lumina Foundation for Education to continue and build upon work the state initiated under a one-year, $150,000 planning grant from Lumina to plan methods of making the opportunity of going to college more affordable for students and the state. Lumina’s “Tuning USA” Initiative is a faculty-led pilot project designed to define what students must know, understand, and be able to demonstrate after completing a degree in a specific field, and to provide an indication of the knowledge, skills, and abilities students should achieve prior to graduating at different degree levels. Over the four-year grant period, with the help of voluntary advisory committees made up of higher education faculty from across Texas, the Tuning process will be applied to 16 academic discipline areas, beginning in 2010 with Electrical Engineering, Industrial Engineering, Civil Engineering, and Mechanical Engineering. In addition to having expertise in the discipline identified in the first paragraph of this memorandum, the faculty member nominated for committee membership should have: 1) experience developing and assessing course-level learning outcomes; and 2) a working knowledge of criteria for program accreditation by ABET, Inc. We also are seeking an individual who will be willing and able to share the work of the committee members with his or her campus colleagues and solicit feedback for the committee. We will be asking that faculty representatives nominated and selected act as communication liaisons between their fellow committee members and their faculty colleagues on campus to ensure that the process of Tuning and course alignment is well coordinated, and that the results are faculty led and faculty driven.

If your institution is interested in voluntarily participating in this statewide initiative, please complete the attached nomination form electronically and submit the form, along with a one- or two-page vitae (like an ABET resume) for the nominee, to Mary E. Smith, Assistant Deputy Commissioner, via email by March 26 at mary.smith@thecb.state.tx.us.

In conjunction with the Tuning process, we are seeking to continue refining the process of more fully and efficiently using the community college pathway to baccalaureate degrees in an effort to deliver high-quality education to a greater number of students as we did with Mechanical Engineering last year. The charges to the Tuning Oversight
Council for Engineering, and in turn to the discipline-specific committees, will be:

1) To create a framework that establishes clear learning expectations for students in each specified engineering discipline area while balancing the need among programs to retain their academic autonomy and flexibility; and

2) To identify a set of lower-division courses, up to the level of a certificate or an associate’s degree, that will provide the necessary academic background so students can migrate seamlessly into participating engineering programs at four-year institutions.

Thank you for your help with this important project. Should you have questions, please contact me at [email] or [phone], or Mary Smith at [email] or [phone]. We look forward to receiving your nomination and to working with you and your faculty on this important initiative.

Attachment
TEXAS HIGHER EDUCATION COORDINATING BOARD
NOMINATION FORM TUNING OVERSIGHT COUNCIL FOR ENGINEERING*

Please submit this form, with a one- or two-page vitae for the nominee, via email by March 26, 2010, to: Dr. Mary E. Smith, Assistant Deputy Commissioner for Academic Planning and Policy, at [email] Thank you for your nomination.

Name of Nominee: ________________________________

Position or Title: ________________________________

Mailing Address: __________________________________________________________
________________________________________________________________________
________________________________________________________________________

Phone: ________________________________

Fax: ___________________________________________________________________

E-mail: _________________________________________________________________

Please provide a brief summary of the reasons you believe that the nominee is particularly suited to serve on this Council.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Name of Nominator: ________________________________

Title: __________________________________________

Institution: _______________________________________

The “Tuning Oversight Council for Engineering” is the full council that will consist of four voluntary advisory committees: Electrical Engineering, Industrial Engineering, Civil Engineering, and Mechanical Engineering.
MEMORANDUM

March 30, 2010

TO: Nominee
Institution

FROM: David W. Gardner

SUBJECT: Tuning Oversight Council for Engineering

As you are aware, you have been nominated to serve on the “Tuning Oversight Council for Engineering,” the full advisory council that will assist the Coordinating Board in integrating the “Tuning” process for course alignment work that was piloted in 2009 through the efforts of the Voluntary Mechanical Engineering Transfer Curriculum Committee. The Tuning Oversight Council will consist of four voluntary advisory committees: (1) Electrical Engineering, (2) Industrial Engineering, (3) Civil Engineering, and (4) Mechanical Engineering.

This is to request your service on the Tuning Oversight Council and on one of the four engineering advisory committees as applicable, based on your nominator’s written comments and your vitae. The first meeting of the Tuning Oversight Council for Engineering will be held on Tuesday, April 20 from 9:00 a.m. – 3:00 p.m. at the Coordinating Board in Austin (1200 East Anderson Lane, Room 2.140). Lunch will be provided. Within certain budgetary restrictions and limits (please see the attached Itemization of Travel Expenses for Reimbursement form), grant funds from the Lumina Foundation for Education’s Productivity initiative will allow us to reimburse approved travel expenses incurred by Council members in connection with service on the Council and their respective advisory committees. To help us in making the best use of grant funds, your efforts at examining economic travel (airfare/lodging) options will be appreciated. Please save all of your receipts; reimbursement will be issued by check from the College for All Texans Foundation within three weeks of your travel, after receipt of your reimbursement request form.

Texas is one of seven states to receive a productivity grant from Lumina Foundation for Education to continue and build upon work the state initiated under a planning grant from Lumina to plan methods of making the opportunity of going to college more affordable for students and the state. Lumina’s “Tuning USA” Initiative is a faculty-led pilot project designed to define what students must know, understand, and be able to demonstrate after completing a degree in a specific field, and to provide an indication of the knowledge, skills, and abilities students should achieve prior to graduating at different degree levels. Over the four-year grant period, with the help of voluntary advisory committees made up of higher education faculty from across Texas, the tuning process will be applied to 16 academic discipline areas, beginning in 2010 with the engineering disciplines noted above.

For many years, we have drawn upon members of the higher education community to inform our decisions about important policy issues. Undergraduate education in engineering is an area in which expert assistance is especially needed. We appreciate your willingness to serve on this important council and advisory committee. Your participation will be a valuable contribution toward the council’s and committee’s work. Should you have questions, please do not hesitate to contact me at [email] or [phone], or Mary Smith, Assistant Deputy Commissioner, at [email] or [phone]. We look forward to working with you.

Attachment
c: «Nominator», «President»
Appendix 5: On Working with Outside Standards

The following white paper was written by Jim Nelson of the Texas Tuning initiative. In the course of the work groups’ efforts to create competency and outcome statements, the issue of redundancy arose. There was a sense among some members that the outside standards document that governs engineering already provided the guidelines that the groups were being asked to generate. Dr. Nelson wrote the following response to those concerns.

The white paper is included here, because many of the disciplines that are accredited or governed by standards documents such as ABET’s have struggled with the same concerns. Dr. Nelson’s explanation of the relationship between outside standards and Tuning offers a lucid explanation of the distinction and a compelling argument for the ways in which the two can complement one another.

TUNING ENGINEERING PROGRAMS
IN THE CONTEXT OF ABET ACCREDITATION

Tuning is the faculty-led process of defining a body of knowledge and skills for an engineering discipline in terms of outcomes and levels of achievement of its graduates. Further, Tuning provides an expected level of achievement at each step along the process of becoming a professional: expectations at the beginning of pre-professional study, at the beginning of professional study, and at the transition to practice. Tuning can also define the competencies achieved through experience after formal education. Through Tuning, students have a clear “picture” of what is expected and can efficiently plan their educational experience to achieve those expectations.

Criterion 2 and Criterion 3 of the ABET criteria for accrediting engineering programs provide the foundation as well as the motivation for “tuning” engineering programs. Criterion 2 requires that each accredited program develop program educational objectives (PEO’s), the career and professional accomplishments that the program is preparing its graduates to achieve, at some point after graduation (typically five years after graduation). The PEO’s are crafted by each program for its particular and unique mission. Criterion 3 provides for program outcomes, describing what students are expected to know and be able to do by the time of graduation. Some disciplines specify additional outcomes that are expected of their graduates. For example, the American Society of Civil Engineers (ASCE) expects civil engineering baccalaureate graduates to have breadth as well as depth in multiple fields of civil engineering. For advanced programs (graduate programs) very little is specified in regard to program outcomes.

The Tuning process does not seek to supplant these criteria of ABET with different or expanded criteria. Rather, Tuning is complementary to ABET in that it seeks to define in specific and assessable terms the elements of the PEO’s and the program outcomes with corresponding levels of achievement at critical milestones in the education of an engineer. The Tuning process also calls upon disciplines to write Degree [Specifications] in terms of general and discipline-specific competencies their students will achieve, at specified levels. Tuning thus facilitates demonstrating achievement of the program outcomes as students move through the educational process. It also provides a framework for demonstrating the degree to which program objectives are attained. Tuning produces assessable learning outcomes that can be used for assessment at multiple levels. Further, through defined surveys of employer and
stakeholder needs, Tuning establishes priorities in the program’s PEO’s. Tuning also develops an employability map showing students the variety of employment options to which their degree can lead. All of these tools provided by the Tuning process help students, parents, and policy makers understand clearly the academic preparation necessary to seek employment in the field.

In addition to these complementary activities that directly support EAC/ABET accreditation, Tuning emphasizes transparency in learning outcomes and degree definitions so that prospective students and parents, interested observers from other disciplines, employers, and policy makers can see clearly what students are expected to know, understand, and be able to do when they graduate from a program, (i.e., the knowledge, skills, and attitudes they are to have developed at program milestones). They can also see what kind of employment opportunities a graduate might reasonably expect. This transparency allows students and parents to make better informed choices at the outset of a program, potentially making it possible to plan a more efficient and cost-effective educational path. Tuning also helps make the case for the value of graduates to employers and policy makers.

A distinct aspect of Tuning is that students are included in all the deliberations about program outcomes and possible levels of achievement. They provide feedback based on their actual experience in the program, thereby providing a reality check on the learning outcomes and other products of the Tuning process. Although this has already been done at the department level in most cases, the role of students is especially critical to Tuning because levels of competency are being defined at critical milestones and agreed upon across diverse institutions.

Tuning is a faculty-driven process that aims to define what students are expected to know, understand, and be able to do when they graduate from a program; to align these expectations with the needs of employers and society; to keep the expectations realistic and consistent with students’ actual experience; and to make these expectations clear and transparent to a wide audience. Tuning does not dictate to the faculty how to achieve these aims. This approach is consistent with the EAC/ABET Criterion 5, Curriculum, that explicitly avoids prescribing specific courses or other curricular details. Both ABET and Tuning explicitly recognize that different institutions and different programs have different missions, different student populations, and different employer groups. Thus, the details of individual programs must continue to be developed as appropriate for the individual institutions – all degrees in a given engineering discipline provide the same fundamental competencies, but how these are achieved will vary from institution to institution. Further, institutions and programs will likely develop additional PEO’s and outcomes and associated competencies to support their unique missions.

Finally, the next ABET accreditation cycle need not duplicate effort expended on Tuning. Tuning can be carried out in a format suitable for ABET accreditation reviews. To minimize duplication, all the products of Tuning should be prepared so they can also be used for accreditation, and they should be prepared in a form that makes program improvement most efficient and accessible.
In the process of developing a systematic approach to presenting the results of their Tuning initiatives, the initiative leaders in Texas developed the following tables and figures. The tables and figures, accompanied by fuller explanations, provide an easily accessible means of conveying the relationships among the various degree levels and their outcomes. Subsequent work groups in Texas were given template versions of these tables and figures as tools for structuring their thinking and presenting their own results.

IEBC recommends this format for compiling the results of Tuning work groups for the same reasons that the Texas leaders developed them: First, they help faculty members better understand the process of writing competencies and outcomes for different degree levels; and second, they will establish a consistent presentation format for Tuning USA.

The tables and figures are isolated in this appendix. To see how they function in the context of the overall report, see the Tuning USA website.

Figure 1.1: An expertise profile
Civil Engineering
(Technical Design or Initiative Management)
Sample Competency-Outcome Table

The competency and outcome table is in many ways the heart of the Texas initiative’s presentation format. For each competency area, learning core learning outcomes are written for each degree level, including high school.

Appendix 7 offers an example of a competency and outcome in the context of its full discursive presentation.

Figure 1.3: A sample specific competency table
Sample Key Competencies Table

The Competencies Table provides an easily read graphic that identifies the sophistication of work being done at each degree level in each of the different competency areas.

### Evaluation
<table>
<thead>
<tr>
<th>G</th>
<th>G</th>
<th>G</th>
</tr>
</thead>
</table>

### Synthesis
<table>
<thead>
<tr>
<th>G</th>
<th>G</th>
<th>BS</th>
</tr>
</thead>
</table>

### Analysis
<table>
<thead>
<tr>
<th>G</th>
<th>G</th>
<th>G</th>
</tr>
</thead>
</table>

### Application
<table>
<thead>
<tr>
<th>BS</th>
<th>BS</th>
<th>BS</th>
</tr>
</thead>
</table>

### Comprehension
<table>
<thead>
<tr>
<th>CC</th>
<th>CC</th>
<th>CC</th>
</tr>
</thead>
</table>

### Knowledge
<table>
<thead>
<tr>
<th>HS</th>
<th>HS</th>
<th>HS</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Mathematic</th>
<th>Natural Sciences</th>
<th>Material Sciences</th>
<th>Mechanics</th>
<th>Experiments</th>
<th>Design</th>
<th>Teamwork</th>
<th>Problem recognition and solving</th>
<th>Ethics</th>
<th>Communication</th>
<th>Contemporary and Historical perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>G</td>
<td>G</td>
<td>BS</td>
<td>BS</td>
<td>G</td>
<td>BS</td>
<td>BS</td>
<td>BS</td>
<td>BS</td>
<td>BS</td>
</tr>
</tbody>
</table>

### Legend
- **GS** Graduate level experience competencies
- **BS** Baccalaureate level experience competencies
- **CC** Pre-Engineering competencies
- **HS** High School graduate competencies

Figure 1.4: A sample competency diagram
Appendix 7: Sample Final Report Entry

In Texas, the Higher Education Coordinating Board developed a standardized presentation format in which the discipline groups could report their work. The tables and figures of Appendix 6 are part of that format. In addition, the format includes descriptions of the different competency areas that are accompanied by the outcomes tables that scale outcomes to degree level. For a sample of the full report, please see the Tuning USA website.

Design

Design is an iterative process that is often creative and involves discovery and the acquisition of knowledge. Such activities as problem definition, the selection or development of design options, analysis, detailed design, performance prediction, implementation, observation, and testing are parts of the engineering design process.

<table>
<thead>
<tr>
<th>Core Competencies needed to enter higher education in Civil Engineering</th>
<th>Pre-Engineering Competencies gained during the first two years of study</th>
<th>Baccalaureate-Level Engineering Competencies</th>
<th>Graduate level Engineering Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intentionally left blank</td>
<td>Explain material properties through key concepts in physics and chemistry</td>
<td>Apply the design process to create a solution while meeting the requirements of real-world constraints</td>
<td>Evaluate design of complex systems and assess compliance with standards of practice, user needs, and relevant constraints</td>
</tr>
</tbody>
</table>

Design problems are often ill-defined, so defining the scope and design objectives and identifying the constraints governing a particular problem are essential to the design process. The design process is open-ended and involves a number of likely-correct solutions, including innovative approaches. Successful design requires critical thinking, an appreciation of the uncertainties involved, and the use of engineering judgment. Consideration of risk assessment, societal and environmental impact, standards, codes, regulations, safety, security, sustainability, constructability, and operability are integrated at various stages of the design process.

The civil engineering graduate designs a system or process to meet desired needs within such realistic constraints as economic, environmental, social, political, ethical, health and safety, constructability, and sustainability.
Appendix 8: Degree Specification Template

As discussed in Chapter 4, the Degree Specification is the portrait of a degree program developed by an individual department at a specific institution. This template provides the general structure for the degree specification.

<table>
<thead>
<tr>
<th>Institution Name and Department</th>
<th>Degree Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>‘Purpose’ provides a general statement on the degree track’s overall purpose. This field can be used to provide a succinct statement of a department’s philosophy as it relates to the specific degree level. The field might begin with a more general statement about the nature and purpose of the degree.</td>
</tr>
<tr>
<td>Characteristics</td>
<td>‘Characteristics’ describes the degree program as it is uniquely expressed in the specific institution. This field can highlight the distinctive features of the degree track, including disciplines and featured subject areas, general and specific focuses, etc.</td>
</tr>
<tr>
<td>Career Pathways</td>
<td>‘Career Pathways’ offers a summary of the discipline group’s definition of career pathways. This field can also note specific destinations of the degree program’s graduates.</td>
</tr>
<tr>
<td>Education Style</td>
<td>‘Education Style’ can identify the department’s particular learning/teaching approaches, such as lectures, small seminars, and labs, and describe the assessment methods used by the department, such as discursive tests, analytical papers, culminating research projects, and comprehensive exams.</td>
</tr>
<tr>
<td>Program Competencies &amp; Outcomes</td>
<td>‘Program Competencies &amp; Outcomes’ lists the program-level learning outcomes, organized by competency area, that were developed by the Tuning work group. This field can also include additional competency areas and their relevant learning outcomes that individual departments wish to include in addition to those developed by the Tuning work group.</td>
</tr>
</tbody>
</table>
Appendix 9: Sample Results for Transfer and Articulation

The Texas Tuning initiative in engineering disciplines utilized the results of the process to improve transfer and articulation among its two-year and four-year institutions. As a result of that effort, work groups developed a variety of tools for students. Two of these appear in this appendix.

The first is a model schedule developed by the Civil Engineering group that outlines the courses required to obtain the baccalaureate degree. The second is a pathways flowchart that describes the various pre-requisites and what subsequent courses are dependent on them.

Community College Program of Study for Transfer to a Civil Engineering Program

<table>
<thead>
<tr>
<th>FRESHMAN YEAR</th>
<th></th>
<th>second semester (spring)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>first semester (fall)</td>
<td>second</td>
<td></td>
<td>semester</td>
</tr>
<tr>
<td>MAH 2413 Calculus I</td>
<td>4</td>
<td>MAH 2413 Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1300 General Chemistry</td>
<td>3</td>
<td>PHYS 2325 University Physics I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1111 Chemistry I Laboratory</td>
<td>1</td>
<td>PHYS 2125 University Physics II</td>
<td>1</td>
</tr>
<tr>
<td>ENGR 1201 Introduction to Engineering</td>
<td>2</td>
<td>ENGR 1201 Engineering Graphics</td>
<td>2</td>
</tr>
<tr>
<td>xxx ###### Texas Core Curriculum Requirement</td>
<td>3</td>
<td>MAH 1304 Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>xxx ###### Texas Core Curriculum Requirement</td>
<td>3</td>
<td>xxx ###### Texas Core Curriculum Requirement</td>
<td>3</td>
</tr>
<tr>
<td>semester credit hours</td>
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<td>semester credit hours</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOPHOMORE YEAR</th>
<th></th>
<th>second semester (spring)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>first semester (fall)</td>
<td>second</td>
<td></td>
<td>semester</td>
</tr>
<tr>
<td>MATH 2415 Multi Variable Calculus (calculusIII)</td>
<td>4</td>
<td>MAH 2413 Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 1307 Plan Surveying</td>
<td>3</td>
<td>PHYS 2325 University Physics I</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 2301 Engineering Mechanics</td>
<td>1</td>
<td>PHYS 2125 University Physics II</td>
<td>1</td>
</tr>
<tr>
<td>ENGR 2304 Programming for Engineering</td>
<td>2</td>
<td>ENGR 1201 Engineering Graphics</td>
<td>2</td>
</tr>
<tr>
<td>xxx ###### Texas Core Curriculum Requirement</td>
<td>3</td>
<td>MAH 1304 Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>xxx ###### Texas Core Curriculum Requirement</td>
<td>3</td>
<td>xxx ###### Texas Core Curriculum Requirement</td>
<td>3</td>
</tr>
<tr>
<td>semester credit hours</td>
<td>16</td>
<td>semester credit hours</td>
<td>1</td>
</tr>
</tbody>
</table>
Civil Engineering Prerequisite Flowchart

Legend

- Red: Science Courses
- Blue: Math Courses
- Light Blue: Engineering Courses

Appendix 09 | Sample Results for Transfer and Articulation
Appendix 10: Sample Results of Local Application

In Utah, the faculty from Utah State University’s History Department have applied the Tuning initiative’s results in a thorough and exemplary way. Beginning with the degree specifications drafted as part of Step Five of the Tuning process, they developed an information packet for History majors and for those desiring to declare a major in the discipline. The packet, which appears below as Appendix 10A, describes requirements, but also includes brief discussions of employment possibilities and statements of outcomes within competency areas. The result is that students are given an explicit and overall picture of the program and what they will be required to do as students in it.

According to Dr. Daniel McInerney, the faculty began by considering what they expected of students in their capstone course. The requirements set for that culminating experience established the end goal for the rest of the curriculum, from which expectations could be set for courses preceding the capstone.

As part of that process, the history faculty at USU developed two other new facets to their degree: First, a pre-major program was developed that engaged students in introductory coursework in History, as well as in General Education courses identified by the faculty as being relevant to a degree in History. Second, the faculty developed rubrics scaled to course-level that make explicit the requirements for success in each course-level and that, together, make clear the learning pathway students follow as they develop the knowledge and abilities necessary for the capstone course. An example of these can be seen in the syllabus for the senior capstone in Appendix 10B.

Appendix 10 A

History Major

* Admission Requirements For This Major

Admission to the History Department is competitive and limited. Admission is based on a student’s current GPA and completion of the pre-major requirements for history. The Department may require students to submit additional materials to the History Admissions Committee.

New freshmen admitted to USU in good standing qualify for admission to the History Department as pre-majors.

Students may apply for major status upon completion of a minimum of 30 credits, including the pre-major requirements, while maintaining a 2.5 cumulative GPA. History majors must maintain a minimum overall GPA in order to remain in good standing in the History Department. Students whose GPA drops below 2.75 will be placed on probation and may be dropped from the major if their grades do not improve.

Undergraduate Program Learning Outcomes in the Department of History

Historical Knowledge

Develop a wide range of historical information

identify the key events which express/define change over time in a particular place or region

identify how change occurs over time
explain historical continuity and change
describe the influence of political ideologies, economic structures, social organization, cultural perceptions and natural environments on historical events
discuss the ways in which factors such as race, gender, class, ethnicity, region and religion influence historical narratives

Historical Thinking
• Recognize the past-ness of the past
  - explain how people have existed, acted and thought in particular historical periods
  - explain what influence the past has on the present
• Emphasize the complex nature of past experiences
  - interpret the complexity and diversity of situations, events and past mentalities
  - compare eras and regions in order to define enduring issues
• Emphasize the complex and problematic nature of the historical record
  - recognize a range of viewpoints
  - compare competing historical narratives
  - challenge arguments of historical inevitability
  - analyze cause-and-effect relationships and multiple causation

Historical Skills
• Develop skills in critical thinking and reading
  - evaluate debates among historians
  - differentiate between historical facts and historical interpretations
  - assess the credibility of primary and secondary sources
• Develop research skills
  - formulate historical questions
  - obtain historical data from a variety of sources
  - identify gaps in available records
• Develop the ability to construct reasonable historical arguments
  - construct a well-organized historical argument
  - support an interpretation with historical evidence from a variety of primary and secondary sources

Career Opportunities

The Department’s “learning outcomes” suggest the ways in which historical study develops expertise in our discipline as well as broader skills in the liberal arts. In other words, our programs not only provide specialized academic training but also prepare students to work in a wide variety of fields. Historical study develops one’s ability to investigate problems, identify reliable sources, analyze information, contextualize complex questions—and
communicate conclusions in a clear and thoughtful manner. Such skills are in demand by employers in many areas. Not surprisingly, our alumni move on to a diverse range of careers. USU history graduates manage multi-national companies and local businesses, serve in many public capacities (including Congress), run charitable organizations, administer university services, work in military intelligence, train as medical doctors, and teach history. Many history students are preparing themselves to teach in public schools and at colleges and universities, while others find employment as “applied” historians. Some graduates qualify to be curators and archivists in museums and libraries, working to classify and preserve materials, setting up exhibits, and working with researchers. Others work as preservation historians for historical societies, collecting data and working to preserve historic sites. Historians also work as editors and researchers in publishing or consult on sets and clothing in the making of films. Some historians work as biographers, while others collect information on family lineage.

History is an excellent undergraduate major for students wishing to work in international relations, journalism, or management. Students preparing for law school, advanced business degrees, and management or sales training also benefit from a history degree. History is a good major for those preparing to work in the growing information management field. Career opportunities for history majors continue to expand and diversify.

Degrees and Programs Offered Through This Department

Bachelor of Arts (BA), Bachelor of Science (BS), Master of Science (MS), and Master of Arts (MA) in History; participates in Master of Social Sciences (MSS)

USU credits (20 of which must be upper-division, including 10 required by major)

<table>
<thead>
<tr>
<th>Minimum University Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Credits</td>
<td>120</td>
</tr>
<tr>
<td>Grade point average</td>
<td>2.00 GPA</td>
</tr>
<tr>
<td>Credits of c- or better</td>
<td>100</td>
</tr>
<tr>
<td>Credits of upper-division course (#3000 or above)</td>
<td>40</td>
</tr>
<tr>
<td>USU credits (20 of which must be upper-division, including 10 required by major)</td>
<td>30</td>
</tr>
<tr>
<td>Completion of approved major program of study</td>
<td>See departments</td>
</tr>
<tr>
<td>Credits in minor if required by department</td>
<td>12</td>
</tr>
<tr>
<td>Credits in American Institutions</td>
<td>3</td>
</tr>
<tr>
<td>ECN 1500; HIST 1700, HIST 2700 OR HIST 2710; POLS 1100; OR USU 1300</td>
<td>See below</td>
</tr>
</tbody>
</table>

Students must complete the General Education Requirements:

- One course chosen from HIST 1060, HIST 1100, HIST 1110, HIST 1500 or HIST 1510 will fulfill the Humanities (BHU) requirement
- Since several courses having a BHU designation are listed as required or elective courses for the History major, one of these courses will fulfill the Humanities requirement, while another will fulfill the Exploration requirement

Students must also complete the University Studies Depth Requirements:

- For students in the History major, HIST 4990 (the required Capstone Course) will fulfill one of the Communications Intensive (CI) requirements
- PHYS 2210 or PHYS 2220 will fulfill the Quantitative Intensive (QI) requirement
Complete at least 2 credits in approved 3000-level or above courses from each of the following two categories: Life and Physical Sciences (DSC) and Social Sciences (DSS)

Transfer Students

The History Department accepts all history courses taught by institutions within the Utah System of Higher Education. Students who are transferring may wish to consult the online Advisor Handbook for articulation information for the institution from which they are transferring. This information can be found at: www.usu.edu/advising/for_advisors/handbook/

Degrees

Since history can be classified in both the humanities and the social sciences, majors may receive either a Bachelor of Arts (BA) or a Bachelor of Science (BS) degree. Because history primarily involves the study of written documents, the department strongly encourages students to choose the BA (requiring proficiency in a foreign language).

History Major Requirements (36 credits)

Minimum GPA for Admission: 2.5, major; 2.5, Career
Minimum GPA for Graduation: 2.75, major courses; 2.0, USU
Minimum Grade Accepted: C+ in major courses
Number of Required Credits: 36

History Major PRE-MAJOR Lower-Division Requirements

Students who wish to become History majors must apply for admission after completing the Department’s pre-major program (at least 30 credits with an overall GPA of 2.5). The pre-major provides a set of “foundation courses” (including broad surveys of Western World, and U.S. history, General Education classes closely tied to the humanities, and USU “competency” courses), all of which prepare students for upper-division work in the major. The pre-major involves the completion of the following THREE categories of requirements:

Complete both of the following (6 credits)

- ENGL 2010 – Intermediate Writing: Research Writing in a Persuasive Mode (CL2) 3
- STAT 1040 – Introduction to Statistics (QL) 3

Complete at least two of the following courses (6 credits)

- ANTH 1010 – Cultural Anthropology (BSS) 3
- ANTH 1020 – Biological Anthropology (BLS) 3
- ANTH 1030 – World Archaeology (BSS) 3
- ENGL 2200 – Understanding Literature (BHU) 3
- ENVS 2340 – Natural Resources and Society (BSS) 3
- GEOG 1300 – World Regional Geography (BSS) 3
- GEOG 1400 – Human Geography (BSS) 3
- ANTH 2210 – Introduction to Folklore (BHU) 3 or
- ENGL 2210 – Introduction to Folklore (BHU) 3 or
- HIST 2210 – Introduction to Folklore (BHU) 3
- PHIL 1000 – Introduction to Philosophy (BHU) 3
- PHIL 1250 – Practical Logic (BHU) 3
- PHIL 2200 – Deductive Logic (QL) 3
Complete the following lower-division survey course requirements in sections A, B and C with a grade of C+ or better in each class, for a total of 12 credits.

C. Premodern History (3 credits)

Complete one of the following courses:

- HIST 1060 – Introduction to Islamic Civilization (BHU) 3
- HIST 1100 – Foundations of Western Civilization: Ancient and Medieval (BHU) 3
- HIST 1500 – Cultural and Economic Exchange in the Pre-Nineteenth Century World (BHU) 3

B. Modern History (3 credits)

Complete one of the following two courses:

- HIST 1110 – Foundations of Western Civilization: Modern (BHU) 3
- HIST 1510 – The Modern World (BHU) 3

C. American History (6 credits)

Complete both of the following courses:

- HIST 2700 – United States to 1877 (BAI) 3
- HIST 2710 – United States 1877-Present (BAI) 3

History Major Upper-Division Requirements

After satisfying the pre-major requirements, students will complete their remaining 24 credits by taking 3000 and 4000 level history courses (with a grade of C+ or better in each class). The upper division classes provide a more focused, detailed and rigorous examination of historical periods and themes.

- One of these courses must be HIST 4990 , the capstone course for the major, taken in a student’s senior year
- Since new courses may be approved from time to time, any upper-division course having a HIST prefix is acceptable
- No more than 3 credits of HIST 4930 may be applied toward the major

NOTE: All History majors must also complete a separate minor.

Since the study of history requires an understanding of many fields of human behavior, students majoring in history must select a minor. Historians are encouraged to take electives in fields that will broaden their knowledge of the world and are closely allied to history, such as religious studies, literature, economics, geography, anthropology, political science, sociology, classics, philosophy or foreign language.

Students who wish to undertake graduate work should pursue the BA degree. During their senior year, they should take the Graduate Record Exam (GRE).
SLAVERY & ANTISLAVERY IN THE ANTEBELLUM U.S.
HISTORY CAPSTONE COURSE: SENIOR THESIS

HIST 4990 SPRING 2011 Mondays, 4:30-7:00pm

This course is designed for senior History majors as the capstone course for their undergraduate work. Students apply knowledge from survey classes and upper-division courses to a well-defined, rigorous, and substantial senior thesis. The course emphasizes historiographical literacy, research, and writing skills in relation to a specific historical topic: antebellum slavery and antislavery.

LEARNING OUTCOMES

As with all classes in our department, HIST 4990 focuses on developing:
- historical knowledge, focusing on events in nineteenth-century U.S. history;
- historical thinking, especially in terms of developing an original interpretive approach to themes connected with slavery and antislavery;
- historical skills, particularly in assessing secondary scholarship and researching and analyzing primary source documents

Objectives: students in HIST 4990

(1) review the basic methods, skills, and tools of historical research;
(2) examine the historiography of antebellum slavery and abolition; and
(3) write a senior thesis based on a critical examination of extensive primary sources.

REQUIRED BOOKS:


EVALUATION OF THE FINAL PAPER:

What “counts” on your final thesis? What makes for an “A” paper? Why might a paper receive a “B,” “C,” “D,” or “F”? The explanation appears at the end of the syllabus where you will find a “learning outcomes rubric.”

The “rubric” is a scoring guide that outlines the criteria used to evaluate your written work in the class in terms of: (1) historical knowledge; (2) historical thinking; and (3) historical skills. Familiarize yourself with the standards and expectations established for the senior thesis.
The following factors “count” in the evaluation of your paper:

- Opening paragraphs (strong, precise statement of nature of the question and thesis; clear preview of the argument the paper will follow)
- Main argument
  (well-organized; coherent; logical sequence of points; plausible interpretation of sources; reasonable claims; significance and persuasiveness of arguments)
- Primary sources (their range and relevance to the topic)
- Secondary sources (range; interpretive choices; relation to your thesis)
- Citations (proper use and form)
- Mechanics (spelling, punctuation, grammar, sentence and paragraph structure)

THE RESEARCH PAPER:

Bear in mind from the start that your goal in this course is to demonstrate your skills as a researcher who will:
(1) tirelessly track down appropriate sources;
(2) reflect on sources with a sophisticated, disciplined, and critical eye;
(3) compose a paper that displays your mastery of expression and construction.

Understand what you face in the capstone course:

Do not expect that the primary sources you need will be comfortably and conveniently identified with a few clicks on Google. If that is how you anticipate the work, you are in the wrong class.

HIST 4990 requires extensive and time-consuming research legwork:

- You will spend much of your Spring semester in the library tracking, hunting, and exploring materials.
- You will be in contact with reference librarians.
- You may need to explore USU’s Special Collections.
- You will have to use interlibrary loan to acquire necessary sources.
- You may work with those dreaded microfilm machines.
- You will probably have to arrange trips to the U. of U.’s Marriott Library

Success (i.e., a passing grade) will require:

- an understanding of the difference between a “topic” and a “thesis”;
- a knowledgeable grounding in the key secondary sources;
- an appreciation of the interpretive questions scholars pose on the subject;
- an appreciation of the interpretive debates that have divided scholars;
- an ability to locate your interpretive question within this larger framework;
- an extensive effort to uncover all of the available resources that provide evidence for your interpretive questions;
- a subtle, skillful, sophisticated ability to read, interpret, and analyze sources within a historical context;
• an ability to express your arguments in a clear, well-organized, logical, and persuasive fashion;

• AND a recognition that you will do nearly all of these jobs on your own, on a schedule that YOU will have to construct and maintain.

Only those students who feel up to the task should stay in the class. Only those students mature enough to maintain a steady and productive rate of progress on their own (without the “stick” of conventional, upper-division class assignments) should remain.

You will work toward your final paper in stages:
• stage one: approval of a topic & thesis
• stage two: approval of a bibliography
• stage three: approval of an outline
• stage four: oral presentation to students in the class
• stage five: completion of the research paper

COMPONENTS OF FINAL GRADE:

Your final grade for the course will be based on evaluations of:

10%: attendance and class participation
5%: TOPIC & THESIS
5%: BIBLIOGRAPHY
5%: OUTLINE
5%: ORAL PRESENTATION

70%: final paper
## Appendix 10 B | Sample Results of Local Application

<table>
<thead>
<tr>
<th>HIST 4990: Senior Capstone</th>
<th>NAME</th>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEARNING OUTCOME</strong></td>
<td>Excellent mastery 5.0-4.5</td>
<td>Good mastery 4.4-4.0</td>
</tr>
<tr>
<td><strong>HISTORICAL KNOWLEDGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student demonstrates an understanding of the key historical events related to the thesis</td>
<td>The paper displays: clear chronological understanding of events; complex grasp of causation; analyzes a range of factors shaping the sequence and outcome of events; situates issues within larger contexts; reflects on larger themes informing specific events.</td>
<td>Sound chronological framework; good grasp of causation; omits some key informing factors shaping events; some effort at contextualizing the question; proposes a sufficient range of larger themes.</td>
</tr>
<tr>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HISTORICAL THINKING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student frames historical questions in a thoughtful, critical manner</td>
<td>The paper addresses a significant historical question that can be identified with some difficulty. Focus rests largely on critical analysis. Key terms defined. Student clarifies the significance of the question. The question is of manageable scope, logically formulated, and precisely stated.</td>
<td>The paper addresses a significant historical question that is clearly stated. Focus rests largely on critical analysis. Key terms usually defined. Question is of manageable scope, posed with minimal logical flaws in framing of the question; offers evidence for claims.</td>
</tr>
<tr>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student evaluates and analyzes primary sources</td>
<td>Demonstrates thorough awareness of origins, authors, contexts of all primary sources; consciously employs verification strategies as needed; complex analysis of sources</td>
<td>Demonstrates some awareness of contexts of primary sources; employs some verification strategies; sound analysis of sources</td>
</tr>
<tr>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student evaluates and analyzes secondary sources, demonstrating an awareness of interpretive differences</td>
<td>Demonstrates careful reading from all relevant historiographical traditions; thorough, fair-minded, and informed assessment of historiography, summarizing main ideas clearly and accurately; places his/her own work within the historiography; raises historically legitimate critiques concerning the strengths/weaknesses of the studies.</td>
<td>Has read widely in several historiographical traditions; assesses and summarizes those read; places his/her own work within the historiography; at some points, critiques either inappropriate or unsubstantiated</td>
</tr>
<tr>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEARNING OUTCOME</td>
<td>Excellent mastery 5.0-4.5</td>
<td>Good mastery 4.4-4.0</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td><strong>HISTORICAL SKILLS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student employs a range of primary sources appropriate to the informing thesis of the paper</td>
<td>Makes thorough use of all relevant online and print databases to identify primary source literature; all available primary sources identified. All sources in bibliography used thoroughly in text</td>
<td>Makes good use of relevant online and print databases; some gaps in primary source base. A few sources in bibliography not fully used.</td>
</tr>
<tr>
<td><strong>Organization of argument</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis announced --and argument previewed for the reader -- at the start of the paper is in a clear and comprehensible manner; clear framework for analyzing the thesis; argument unfolds through a logical sequence of points; excellent transitions.</td>
<td>Statement of thesis --and preview of argument -- are clear, but do not appear in the opening of the paper. Structure of the argument is sound, understandable, and appropriate to the initiative. Good transitions.</td>
<td>Thesis stated, but not at the start of the paper. Argument previewed; but the paper moves in a different direction. Difficult to detect a logical sequence to the points raised in the paper. Weak transitions between parts of argument.</td>
</tr>
<tr>
<td><strong>Well-substantiated argument; proper citation of evidence</strong></td>
<td>The writer correctly and thoroughly cites sources using Chicago Manual of Style format in footnotes or endnotes; the paper includes a separate bibliography listing all sources consulted for the paper.</td>
<td>TCites sources using the Chicago Manual of Style format in footnotes or endnotes and provides separate bibliography; however, some gaps in citation, errors in their construction, and inaccuracies in the bibliography.</td>
</tr>
<tr>
<td><strong>Mechanics</strong></td>
<td>Spelling, punctuation, grammar all correct; proper sentence and paragraph construction</td>
<td>Occasional errors in spelling, punctuation, grammar, sentence &amp; paragraph construction; not severe enough to hinder an understanding of the paper’s main points.</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td>500-450 points: “A” range</td>
<td>ex.: 475 pts. equivalent to 95 / A</td>
</tr>
<tr>
<td></td>
<td>448-400 points: “B” range</td>
<td>414-400: B-</td>
</tr>
<tr>
<td></td>
<td>399-385: C+; 384-361: C</td>
<td>360-350: C</td>
</tr>
<tr>
<td></td>
<td>349-340: D+; 339-315: D</td>
<td>314-300: D-</td>
</tr>
</tbody>
</table>

**LETTER GRADE:**
About the Authors

David W. Marshall is Associate Director of Tuning USA and Associate Professor of English at California State San Bernardino. He has worked with the Institute for Evidence-Based Change on various initiatives for three years.

Michelle Kalina is the Institute for Evidence-Based Change’s Vice President for Tuning USA. She has over thirty years’ experience as a faculty member in California’s community college system.

Will Dane is a researcher and writer for the Institute for Evidence-Based Change and generally keeps Tuning USA moving in the right direction.
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