Development and Assessment of Online Modules for Hybrid Orientation Program

Victor Gallardo, Mequanint Moges, Enrique Barbieri
Engineering Technology Department
University of Houston

Aymara Boggiano, Carlos Ramirez
Hispanic Studies Department
University of Houston

Abstract

Current and future teaching methodologies rely on the careful use of technology in education as well as in offering training opportunities to teaching assistants, instructional assistants and other non full-time faculty. The University of Houston recognizes that technological advances are improving opportunities to enhance the quality of effective teaching methodologies. To address the disparity in knowledge about methodological practices by the new instructors, the departments of Hispanic Studies and Engineering Technology developed a Hybrid Orientation Program (HOP) that comprises both generic and department-specific modules. The implementation of the new modules required that the existing orientation programs be modified to integrate a theoretical on line training and hands on face-to-face training for new instructors.

This paper presents the design and implementation of the generic modules, and its integration with the university initiative to train instructional assistants led by the office of Educational Technology and University Outreach (ETUO). Each module contains an introduction, a detailed presentation of contents and assessment sections that can easily be adopted by other departments and colleges across the university. The assessment of the effectiveness of these modules is conducted by surveying the coordinating faculty, the trainees (the new instructors), and the university students who ultimately receive the instruction from the trainees.

The results indicate that the new hybrid orientation programs helped increase the performance of our teaching assistants: they recognize the usefulness of the training sessions and the preparation it provides for real class situation they encounter. In addition, they feel that there is an easily accessible source of information which gives them the opportunity to get easily and comfortably acquitted to the general as well as specific rules and regulations of the university system.

Introduction

The quest for hybrid training systems that are comprehensive, uniform, repeatable and accessible source of instructional material and tools continues. Hybrid training combines the best styles of two instructional activities: the classical class room instruction and online training activities. There are many interesting initiatives that might support the use of hybrid training as an instructional tool[1,2]. Besides reducing travel requirements to campus on regular basis to attend training, the hybrid instruction improves self-directed learning, critical thinking and time management. In this paper our

focus will be in the design and implementation of hybrid instructional modules specifically designed for teaching assistants and part-time faculty. This is because at the University of Houston, either Part-Time Faculty (PTF) or Teaching Assistants (TA) and Graduate Instructional Assistants (GIA) teach the majority of low-level courses. In addition we found out that in most cases the above listed instructional assistants do have little or no previous experience in teaching.

To meet the needs for orientation and training for the instructional assistants, we sought to develop a hybrid orientation program that shows great potential to meet these demands by offering both online as well as face-to-face orientation training program. In our previous work[3], we introduced the foundations for orientation and training program that assures continuous teaching qualities by our instructional assistants including part time faculty. This is part of a continuous effort in the improvement of ours labs and classrooms as well as the search of the best practices in the conduction of labs and lectures[4,5]. This effort was initiated with the CLABS project which revamped the sophomore and freshman labs in the ET department[6].

HOP Process

The implementation of the online training module is based on two general components: the generic and specific training modules. The generic training modules consist of various modules that address the methodological issues that are common to all members teaching at the university level regardless of their course's subject. On the other hand the specific training modules will set up standard practices and approaches to the delivery of specific course contents in each department. In the later case each participating department will be responsible in the development and implementation the modules.

Figure 1 shows the hybrid orientation and training process. As shown in the figure, the hybrid training will have two phases. During the first phase all instructional assistants will go through the on-line training process and must pass the assessment in order to be eligible to participate in the face-to-face training, which is phase 2 of the training process. This orientation and training process will be followed by a three level assessment activities that includes students, faculty and lab manger assessments in order to ensure the quality and measure the results of the training outcomes. As part of our continuous improvement measures the various assessment activities will be conducted during each semester.

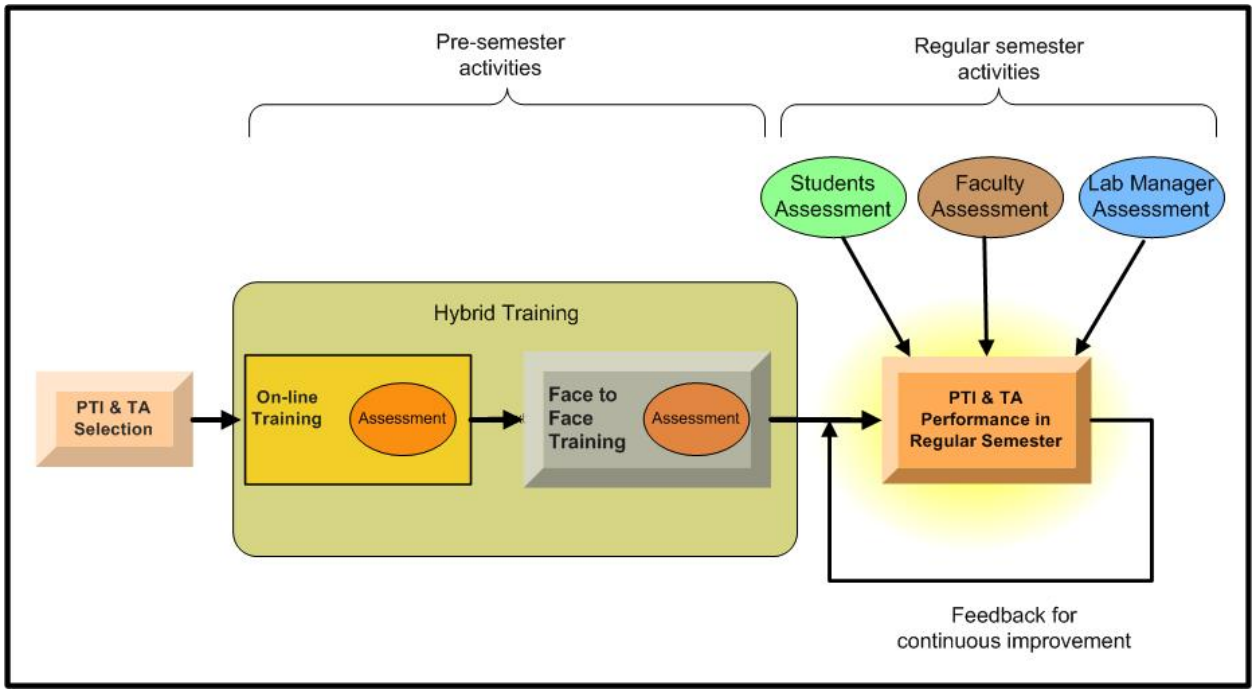

Figure 1 Hybrid Orientation and Training Process

Hybrid Orientation Program Modules

When considering the development online modules for hybrid orientation programs, it is necessary to consider the types of online modules developed, their contents and their communication requirements. Characteristics and contents of these modules have a significant effect on the design and implementation of the modules. In any given module, there may be text, graphics, short video clips and certain assessment tools. The modules should be carefully designed in order to meet some of the critical demands for high flexibility and relatively easy remote accessibility. This is especially true as most of our instructional assistants reside in various geographical locations prior to joining the respective departments. Allowing the easy access to these resources will considerably reduce the rush during the traditional face-to-face orientation programs that are held within two to three days before the start of each semester. It will also allow them to get some of the important information required by the university at their own pace.

Generic Modules

The generic modules are designed to introduce several pedagogical issues and administrative issues that must be addressed:

- The need for guidelines and models of the best teaching practices at the university level
- The need for possible case scenarios of challenging situations
- The need for strategies to solve those situations in a pedagogical manner
- The need for guidelines to enhance the effectiveness of lecturing
- The need for functional language for delivering a lecture
- The need for guidelines to giving clear oral instructions.

Each module has two sections: the main contents and assessment section. Those contents may be delivered in the form of only text, PowerPoint and/or using multimedia. It has been studied that the use of different content delivery techniques encourages trainees for more creativity as well as engagement. It also considered the various background and learning styles of our diversified instructional assistant groups. During the presentation phase instructional assistants will be introduced topic's specific information. After the presentation, the assessment part is used to measure content comprehension which may consist of the presentation of case scenarios in which the trainee has to choose among possible answers. The assessment will help faculty and administrative staff to determine whether the intended content was delivered and eventually certify that the instructional assistants have undergone the training.

In the case of the Hispanic Studies Department some of the modules present guidelines and models of the best teaching practices at the university level. The online content delivery in this specific module serves as an introduction to various class management and administrative skills. However, in order to be effective, it has to be complemented with real interactions. In this case, the hands-on orientation and training is achieved through a follow up training on campus workshops. In those workshops, face-to-face interaction and microteaching practices will provide the instructional assistants with the basic pedagogical knowledge and the confidence necessary to carry on an effective class at the university level.

Specific Modules

On the other hand the specific modules are designed to address specific issues related to each department. In this case each department will be responsible in exploring its own needs and resources for the development of online training modules for its teaching assistants. In the Department of Engineering Technology, for example, some of the needs include but not limited to:

- General policies of the department
- Best soldering practices and wiring standards
- Emergency and safety regulations
- Training on various software simulation tools.

Figure 2 shows a snapshot of the online training modules developed and currently being used in the Engineering Technology department. Each module as shown in figure 2 is designed specifically to meet the needs required by the Engineering Technology department. Teaching assistants will use those modules at their own pace as well as from their own convenience. That is, the modules are more accessible to more teaching assistants including our part-time faculty in more places. As mentioned earlier the development of each module keeps in mind the different learning styles of our instructional assistants. This includes modules for visual learners using PowerPoint, short video clips and graphics and modules for auditory learners which may use audio files.

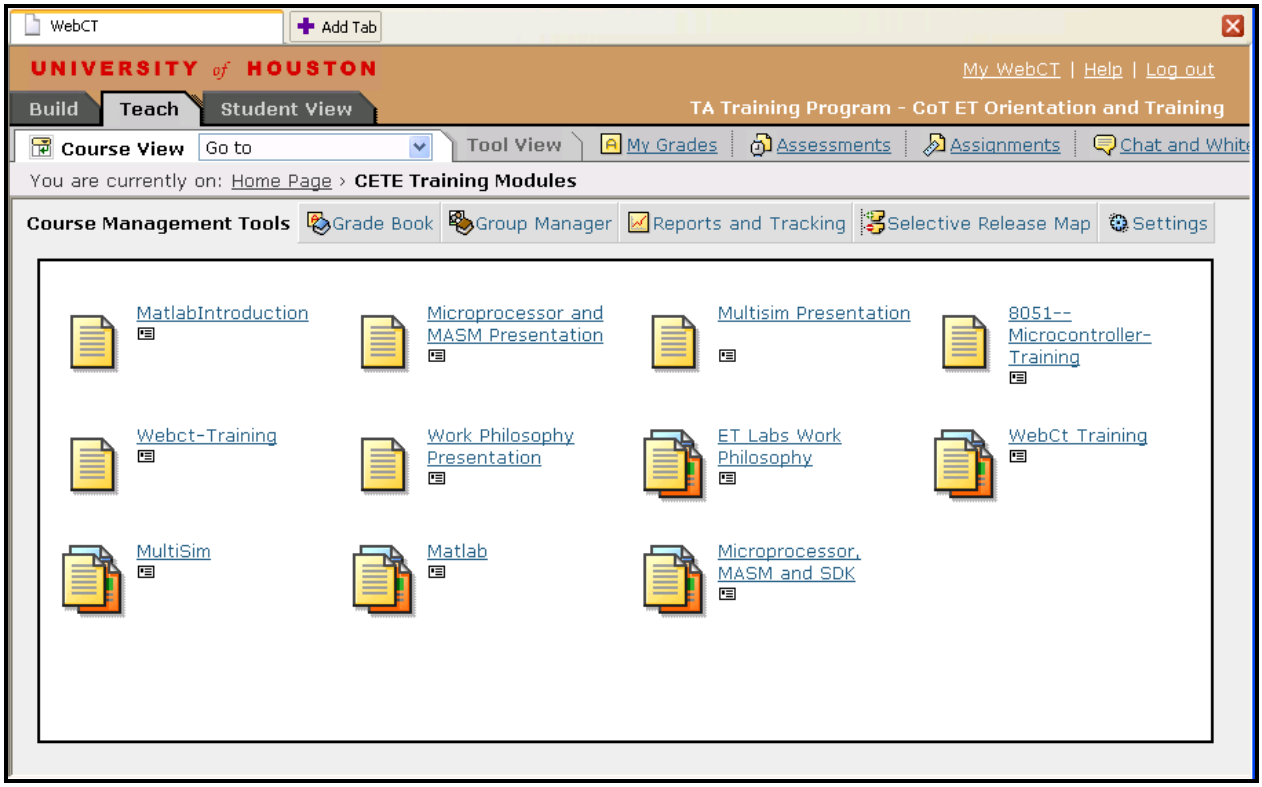

Figure 2 A Snapshot of the Specific Online Training Modules (ET)

Figure 3 shows the internal design of on of one of the specific online modules: *lab management work philosophy*. In this figure the two sections: the work philosophy presentation and the work philosophy quiz section are shown at the left side of the snapshot. Once the instructional assistants go through all the required knowledge during the presentation section, they will be required to pass the corresponding quiz.

The Hybrid training developed in the Engineering Technology department has been used since spring 07 orientations and training session for approximately 30 assistants. The modules have been used on WebCT and face-to-face training. The modules have been submitted to the Educational Technology and University Outreach (ETUO) office for streaming of video and uploading into the stream server. They are available on the WebCT platform for instructional assistants and part time faculty at the University level.

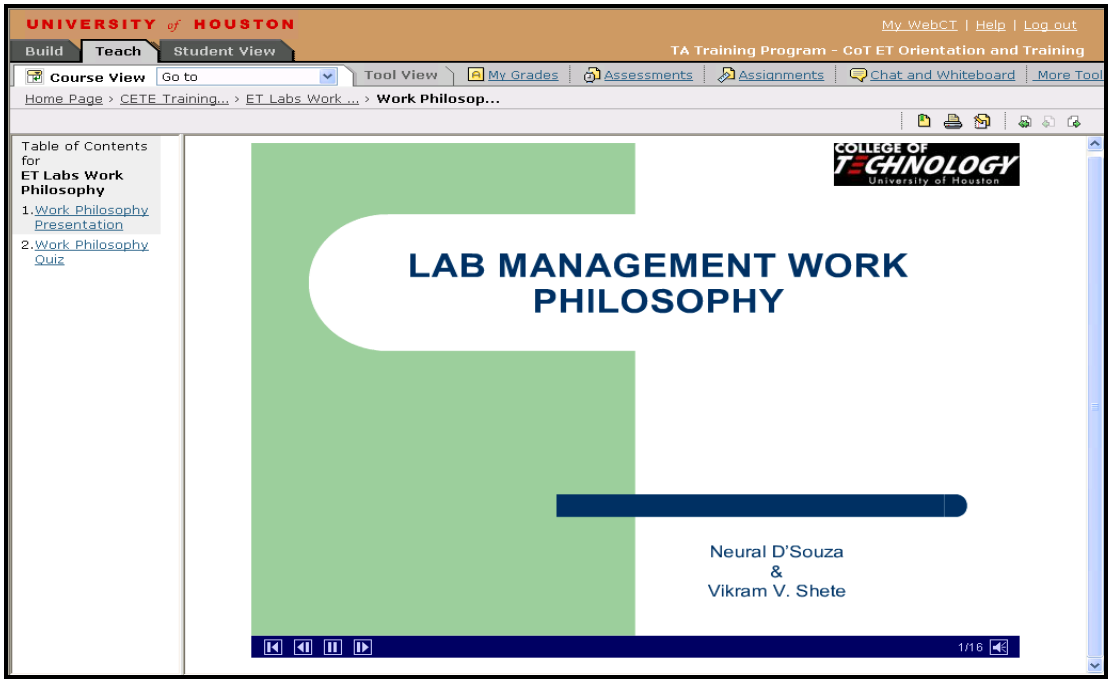

Figure 3 A Snapshot of the Lab Management Work Philosophy Online Module

Online Assessment Modules

In this section we present our assessment tools used as part of our continuous quality improvement programs. The ultimate success of our hybrid orientation and training program will be measured by the advances in the students' knowledge, attitude and skill. The progress in turn requires the results of a carefully designed assessment tools. Various studies show that today there are different assessment tools available for different application and/or instructional structure[7, 8, 9].

In this case we are continuously working in improving our assessment tools by revising the existing ones and creating new and better assessment tools. When properly presented assessment results can help build support for respective departments and for initiatives that their members hope to carry out.

In this study we developed assessment questions from three perspectives: the students' perspective, the faculty perspective and the lab managers' perspective. In all of them the criteria shown in table 1 were utilized. All assessment activities were conducted during the fall 2007 academic semester.

Table 1 LA & PTF assessment criteria

Criteria	Showed by
Professional Attitude	Professional attire Professional addressing of students Respectful towards the students
Knowledge	Clear presentation of core concepts Preparation to the lab Addressing questions raised by students
Communications skills	Interaction with lab manager and faculty Clear presentation and description of concepts and procedures Clear and timely communication of grading policy with the students
Criteria for Students Assessment	Fair and timely evaluation of student performance Continuous improvement based on student/professor/lab manager feedback
Safety procedures	Handle the lab sessions following the safety procedures Implement safety procedures in the lab
Course/Lab Specific requirements	Knowledge and creativity Hands-on expertise

A sample online assessment module is shown in Figure 4. The assessment consists in basic questions related to the content of the module as well as possible reaction from the TA and PTF to real specific situation that may occur in the classroom and lab.

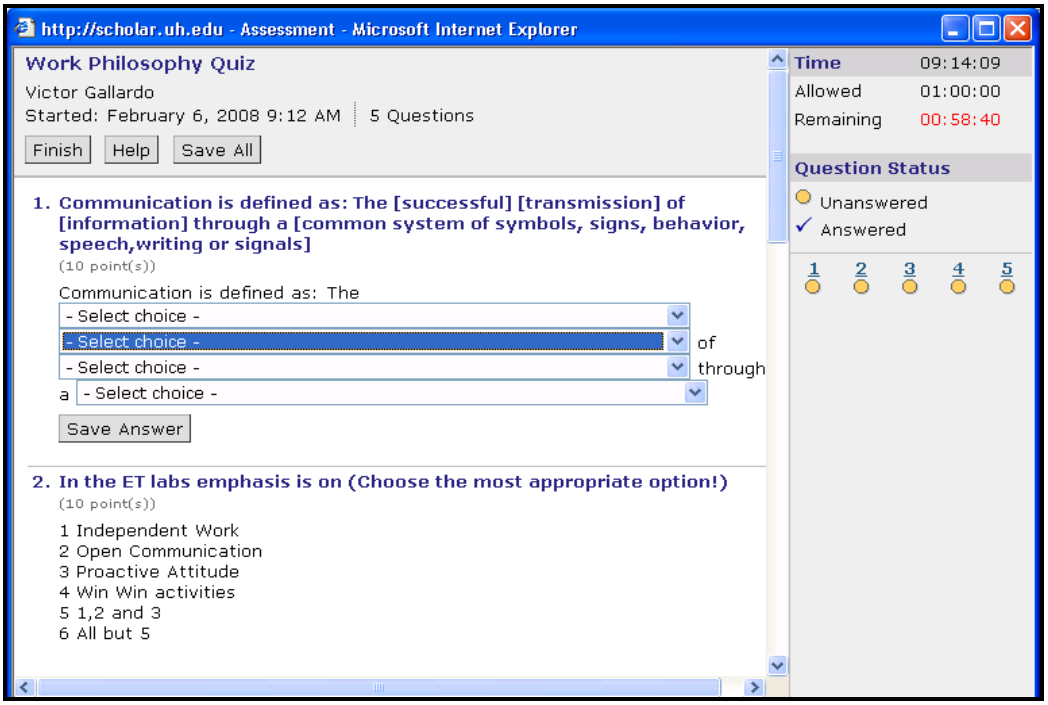

Figure 4 A Sample Online Assessment Module

TA's and PTF Assessments' results

The TA and PTF assessment is performed by the students in two surveys during the regular semester. The students complete the first evaluation at middle of the semester provided partial data. The second evaluation is accomplished at the end of the semester showing a permanent improvement based on the feedback provide to the TA during the first evaluation. Feedback from students regarding their newly trained instructional assistants is given in Table 1. The results shown in the table clearly illustrate the students' level of satisfaction, enthusiasm and assistance level.

Table 2 Students' feedback

Evaluation parameters	Students	
	Positive	Negative
The lab assistant was enthusiastic about the work.	95 %	5%
The lab assistant provides enough instruction at the beginning of each lecture to do the lab.	98%	2%
The lab assistant responds clearly to my questions.	96%	4%
The lab assistant responds promptly to my questions.	90%	10%
My TA and PTF is knowledgeable about the lab.	100%	0%

Table 2 and 3 show the results of the evaluation performed by the faculty and the lab manager. In these assessments specific parameters are evaluated. They are defined by the criteria shown in table 1. These assessments are performed during the regular semester and conclude at the end-of-the semester with a form where a close judgment of the real TA improvement is accounted.

Table 3 Faculty and Lab Manager Feedback

Evaluation Parameters	Faculty		Lab Manager	
	Positive	Negative	Positive	Negative
Theoretical knowledge of the assigned lab	98 %	2 %	98 %	2 %
Applied knowledge of the assigned lab	95 %	5 %	95 %	5 %
The working knowledge of the lab instruments	98 %	2 %	90 %	10 %
The working knowledge of the simulation software	100 %	0 %	95 %	5 %
Assisting students	95 %	5 %	97 %	3 %
Presentation skills	89 %	11%	90 %	10 %
Punctuality	96 %	4 %	98 %	2 %
Communication skills	85 %	15 %	89 %	11 %
Fairness and consistency of grading	95 %	5 %	95 %	5 %
Timely return of the graded assignment	89 %	11 %	90 %	10 %
Regular contact with the faculty/Lab Manager	90 %	10 %	99 %	1 %
Consistent conduct of instructions	94 %	6 %	92 %	8 %
Professionalism as an assistant	95 %	5 %	97 %	3 %

Summary and Conclusions

In this paper we presented the design and implementation of online training modules for hybrid orientation program for part-time faculty and teaching assistants. It addressed the use of technology to promote quality orientation and training programs for instructional assistants and part time faculty through collaboration with the Educational Technology and University Outreach. The modular feature of the project makes it scalable as more modules can easily be added to the existing modules as the need comes. The modules may also be easily adoptable with no or little modification by other departments. Continued examination of the quality improvement in the students achievement should be conducted by appropriate assessment tools that include feedback from students, faculty as well as lab managers. Our current results show an encouraging trend in the satisfaction of our student body and improvement of students' final grades in the labs and lectures.

References

1. Black, G., 2001, – "A comparison of Traditional Online and Hybrid Methods of Course Delivery", Arkansas Tech University, 2001.
2. Godschalk, D.R. and Lacey, L., 2001 – "Learning at a distance: Technology Impacts on Planning Education," Journal of Planning Education and Research, 20, pp 476-489.
3. Moges, A., Gallardo, V., Barbieri, E., Boggiano, A. and Ramirez, C., 2007, "Development of Hybrid Orientation Program for Instructional Excellence," Proceedings of the ASEE Gulf-Southwest Annual Conference, South Padre Island, March 28 -30, 2007, on CD-ROM.
4. F. Attarzadeh, V. J. Gallardo, E. Barbieri, "Toward Best Laboratory Management Practices" Proceedings of the 2007 ASEE Gulf-Southwest Annual Conference, University of Texas–Pan America, March 28-30, South Padre Island, TX
5. F. Attarzadeh, V. J. Gallardo, D. Gurkan, E. Barbieri, "Teaching and Graduate Assistants Training" Proceedings of the 2007 ASEE Gulf-Southwest Annual Conference, University of Texas–Pan America, March 28-30, South Padre Island, TX
6. D. Gurkan, F. Attarzadeh, D. Benhaddou, V.J. Gallardo, and S. Chacón, "Learning-Centered Laboratory Instruction for Engineering Technology," Proc. of the 2006 ASEE Gulf-Southwest Annual Conference, Southern University and A&M College, Baton Rouge, LA.
7. Willson, R., 2000, – "Comparing in-class computer-mediated discussion using a communicative action fraamework," Journal of Planning Education and Research, 19, pp 409-418.
8. Airasian, P. W., 2005, - "Classroom Assessment: Concepts and Applications," Boston, McGrawHill.
9. Nsar, K. J. Pennington, J. and Andres, C., 2004, - "A Study of Student's Cooperative Education Outcomes," Journal of Cooperative Education, 38, pp 12-21.

VICTOR GALLARDO

Mr. Gallardo is the Instructional Lab Manager for the Computer Engineering and Electrical Power programs (also he is a Ph.D. candidate in Electrical Engineering). Mr. Gallardo current research interest includes adaptive optics, real time image processing with applications in human and computer vision, as well as reconfigurable instrumentation. He is co-founder of CORE (Coordination Of Robot Education) and has authored or coauthored more than 30 technical papers, technical reports, and applications reports.

MEQUANINT MOGES

Dr. Moges currently serves as an Instructional Assistant Professor of Engineering Technology at the University of Houston in Texas. His area of expertise includes design and optimization of wireless sensor networks, performance evaluation and optimization of computer and communication systems and job scheduling in parallel and distributed systems and computational grids.

ENRIQUE BARBIERI
He received the Ph.D. in Electrical Engineering from The Ohio State University in 1988. He served on the faculty of the Electrical Engineering and later Electrical Engineering & Computer Science at Tulane University from 1988-2002 where he was a tenured Associate Professor and Chair of the Department (1996-98). In 2002 he joined the Department of Engineering Technology at the University of Houston as Professor and Chair. His research interests are control and applications to electromechanical systems. He is a member of IEEE and ASEE and serves on the Executive Council of the Texas Manufacturing Assistance Center – TMAC Gulf Coast Region at the University of Houston.

AYMARA BOGGIANO
She received the BA in 1982 and MA in 1987 from The Ohio State University. Her career as a Spanish, French, and English language teacher spans over 19 years. She has effectively applied the communicative, proficiency and interactive-based teaching approaches in a variety of educational environments, including K-12, Community Colleges, Universities, and Industry, in the US and in Venezuela. She is currently at the University of Houston where she teaches Spanish Language and Spanish for Heritage Speakers courses. She is also the coordinator of The Spanish Language Program. Her current interests include Training Teaching Assistants and Part-time faculty, and exploring innovative uses of Technology in the teaching of Spanish in the classroom.

CARLOS RAMIREZ
Director of the Spanish Language Program at the University of Houston