

The Program in Electronic Music Composition and Musical Production at the School of the Arts of the Polytechnic Institute of Castelo Branco

Carlos Guedes* and Rui Dias†

* Escola Superior de Artes Aplicadas (ESART-IPCB), Castelo Branco, Portugal, carlosguedes@mac.com

† Escola Superior de Artes Aplicadas (ESART-IPCB), Castelo Branco, Portugal, ruidias@esart.ipcb.pt

Abstract — This paper presents the program in electronic music composition and musical production at the School of the Arts of the Polytechnic Institute of Castelo Branco (<http://www.esart.ipcb.pt>). This study program offers a 1st cycle degree and is functioning since the academic year of 2005/2006. At the conference, we will present the curriculum of the program, some recent work by the students, and the next phase in the program development, which includes making contacts with people and institutions to further develop the program through ERASMUS exchanges of faculty and students, hiring of new faculty members, and eventual creation of an European partnership for a 2nd cycle degree

Keywords: New academic programs in electronic music, electronic music, musical production, multimedia.

I. INTRODUCTION

The program of Electronic Music Composition and Musical Production at the School of the Arts of the Polytechnic Institute of Castelo Branco (ESART-IPCB) started functioning in the academic year of 2005/06, and it is now at the end of the first phase of development. After briefly describing the institution at which the program is functioning we give a detailed description of the program's philosophy and goals, its curriculum, and the next phase in the program development.

A. The Polytechnic Institute of Castelo Branco

The Instituto Politécnico de Castelo Branco (IPCB) is a public institution of higher education created in 1980. Located in Castelo Branco, the IPCB has taken part in the growth of the region, actively contributing to the regional development and to the improvement of the town's quality of living

Comprising six schools, 36 graduations, about 5000 students, over 400 faculty and 240 staff members, high level teaching and research departments, accommodation, high quality sport facilities, and with increasingly efficient connections to the market and the surrounding community, the IPCB is nowadays a modern and solid institution striving for the highest quality standards in education.

Its main objectives are the initial, continuing and specialized training of highly competent professionals,

scientific and technological research, the provision of services to the community and the promotion of regional development.

The strong connections that the IPCB has with the community and with cultural and economic development have evolved into partnerships with the most important national scientific offices and into research and development partnerships with several European universities.

The IPCB has been in great demand, being the Portuguese public institution of higher education with more applications in the academic year of 2004/05. In that year, the IPCB offered 975 vacancies and there were 5282 candidates. About 95% of these candidates chose the IPCB as their first option [1].

1) *The Schools:* the IPCB has six Schools in the areas of Agrarian Sciences, Arts, Education, Health, Management and Engineering. The courses taught at IPCB combine strong practical and technical training with theoretical foundations at the highest scientific level, aiming at preparing highly competent professionals. The IPCB schools have high quality facilities with state-of-the-art equipment. The Institute also has excellent sport and cultural facilities.

B. The School of the Arts

The School of the Arts (ESART) has study programs in two areas: Communications and Visual Art and Music and Performing Arts. It has over 50 faculty members and over 530 students, of which 150 are in Music and Performing Arts study programs. The programs in Communications and Visual Art are:

- Image Arts with specializations in Graphic Design and Multimedia and Audiovisual Design;
- Fashion and Textile Design;
- Interior Design.

The existing programs in Music and Performing Arts are:

- Instrumental Performance with specializations in Violin, Viola, Violoncello, Flute, Oboe, Clarinet, French Horn, Bassoon, Trumpet, Trombone, Accordion and Guitar;
- Music Education and Theory

- **Electronic Music and Musical Production**

There is a great interdepartmental activity at ESART. As an example, the school organizes every year a fashion design show to showcase the graduation works of the students from the Fashion and Textile Design program, in which most of all the other programs participate by creating the set, by creating video clips to be shown during the performance, and, of course, by creating the music for the whole event.

ESART has established several ERASMUS-SOCRATES bilateral agreements for the exchange of students and faculty with similar institutions in several European countries. They include Belgium (Lemmenstituut Leuven), Finland (Kymenlaakson Polytechnic), France (Conservatoire National de la Région de Boulogne – Billancourt), Germany (Bauhaus – Universität Weimar, Hochschule für Musik Köln, Hochschule Vechta), Greece (U. of Macedonia), Italy (Politecnico di Milano, Nuova Accademia di Belle Arti di Milano, Conservatorio Santa Cecilia di Roma, Università degli Studi di Roma "La Sapienza"), Poland (Bialystok Technical University), Romania (Universitatea "Transilvania" din Brasov), and Spain (Universidad de Salamanca, Universidad de Extremadura, Universidad Europea Miguel de Cervantes).

II. THE PROGRAM IN ELECTRONIC MUSIC COMPOSITION AND MUSICAL PRODUCTION

The program in Electronic Music and Musical Production started in the academic year of 2005/06 and is one of the latest programs that were created in ESART. It now counts 15 students — 10 in the first year and 5 in the second year — and soon became a very attractive study program in Portugal since it is the only of its kind in higher education institutions in the country — there is a Music Technology program in Porto but it aims at forming studio technicians and sound engineers. In its second year, the program attracted one-third of the overall candidates to the music study programs at ESART.

This program combines subjects from the fields of sonology — with extensions to computer science and digital visual arts — and sound registration and music production. It has a fair amount of optional credits, which allows the students to take full advantage of the existing programs at ESART, for example, by combining classical instrumental performance or graphic design with their study program.

A. *General Philosophy and Goals*

The main goal underlying the creation of the program is to form highly qualified professionals with a strong knowledge about sound recording and musical production to work in the all the areas where electronic music is applied. The areas where the graduates from the program are expected to work range from straightforward electronic music composition, music for games and multimedia products, to software development and sound engineering. In tandem with the philosophy of the IPCB and of the Polytechnic system in Portugal, the program in Electronic Music and Musical Production combines strong practical training with solid theoretical foundations, and aims at forming professionals that can swiftly respond to

the challenges imposed by today's ever changing music technology world.

The curriculum is designed to accept a wide variety of students provided they show that they have a musical activity, preferably in electronic music. Once admitted into the program they may have to take remedial basic musicianship courses. While at the program they have to develop their own vision about electronic music practice as an outcome of the experiences they will have in the course of their work.

The main concept underlying the creation of this study program is that the students should pass through several experiences in the areas where computer technology is applied in musical practice and develop their own practice in the field through this experience. The program has 5 tracks of apprenticeship: electronic music composition and practice (49 - 64 credits), musical production (15 - 30 credits), digital visual arts (14 credits), programming languages (16 credits), and theoretical foundations (43 credits). There is also a fair amount of optional courses, which total 25 credits, and a 1-credit seminar on a relevant subject to the study program every academic year. We now present a summary of the subjects covered by each track:

The track in electronic music composition and practice offers courses in MIDI and digital audio editing and manipulation, all known forms of sound synthesis (analogue and digital), computer music languages such as CSound and SuperCollider, Max/MSP/Jitter programming, algorithmic composition, sound for film and multimedia, and digital interactive systems.

The track in musical production offers courses that teach sound capture techniques, studio recording and audio production and post-production.

The track in programming languages comprises courses that teach C, C++ and LISP.

The track in theoretical foundations offers courses in the history of electronic music and digital arts, music analysis, acoustics, psychoacoustics, digital signal processing, and a speculative course on the future of audiovisual production.

The track in digital visual arts offers courses in image capture and editing, website creation, and creation of multimedia content.

The optional courses allow the students to complement their education in subjects of their own interest.

In the third year, the students have to develop an original individual project that must reflect their interests and vision in electronic music practice and/or musical production. This project can consist of virtually anything related to these fields of study (e.g. software, music for a game, a set of electronic music pieces, an installation, a sound recording project, etc.).

By implementing this eclectic approach in the program and by promoting aesthetic diversity, we are expecting to form knowledgeable professionals that can follow very distinct and independent paths in their future, be it in electronic music composition, musical production, software development, multimedia, or research.

B. *The curriculum and faculty*

The program of study lasts 6 semesters, comprising 180 ECTS credits, and offers a 1st cycle degree. It takes

advantage from the fact that the school has programs in digital visual arts and in music theory and performance, which makes that some of the courses in the curriculum belong to other study programs as well — e.g. Music Analysis, Multimedia/Hypermedia Tools.

Below, we show the courses that constitute the program as well as the suggested sequence for the six semesters of study.

TABLE I.
LIST OF COURSES COMPRISING THE PROGRAM AND THE SUGGESTED SIX-SEMESTER SEQUENCE

1 st Semester — COURSES	ECTS
Seminar I	1
Composition I	5
Introduction to MIDI and Digital Audio	3,5
Musical Production I	3
Acoustics I	3
Programming Languages I	4
History of Electronic Music and Digital Arts I	2
Music Analysis I	3
New Communication Systems in Music I	2,5
Option I	4

2 nd Semester — COURSES	ECTS
Composition II	5
Introduction to Sound Synthesis	3,5
Musical Production II	3
Acoustics II	3
Programming Languages II	4
History of Electronic Music and Digital Arts II	2
Music Analysis II	3
New Communication Systems in Music II	2,5
Option II	3

3 rd Semester — COURSES	ECTS
Seminar II	1
Composition III	5
Musical Programming I	3,5
Musical Production III	4,5
Acoustics III	3
Programming Languages III	4
History of Electronic Music and Digital Arts III	2
Multimedia/Hypermedia Tools	4
Option III	4

4 th Semester — COURSES	ECTS
Composition IV	5
Advanced Sound Synthesis	3,5
Musical Production IV	4,5
Acoustics IV	3
Programming Languages IV	4
Image Capture and Editing	5
Option IV	4

5 th Semester — COURSES	ECTS
Seminar III	1
Project I	6
Musical Programming II	3,5
Sound for Film and Multimedia	4
DSP I	4,5
The Future of Audiovisual Production	2
Edition and Post-Production	5
Option V	5

6 th Semester — COURSES	ECTS
Project II	9
Introduction to Algorithmic Composition	3,5
Digital Interactive Systems	4
DSP II	4,5
Psychoacoustics	3
Option VI	5

There are three faculty members that teach the main subjects in electronic music composition and musical production in the program: Carlos Guedes, Rui Dias, and Gustavo Costa.

Carlos Guedes finished his PhD in composition at NYU in 2005 and did research in interactive dance [2]. His doctoral research has been presented in international conferences including the previous SMC [3]. Between 2001 and 2004 he lived in the Netherlands where he did PhD-related research at the Institute of Sonology in the Hague. His compositional activity is oriented towards interdisciplinary efforts in dance, film, theater, multimedia interactive installations, and interactive performance. Carlos Guedes was the head of the composition program at the School of Music and Performing Arts in Porto (ESMAE-IPP) between 2003 and 2006, and was the main responsible for the creation of this study program, and currently the program director.

Rui Dias finished his B.A. in composition at ESMAE and has focused his activity in musical programming and interactive audio-visual systems. Rui Dias is currently a Masters' candidate in the Multimedia Technology Program at the School of Engineering of University of Porto.

Gustavo Costa finished his B.A. in music technology and did the course at the Institute of Sonology in the Hague. His interests are experimental improvised music performance and algorithmic composition. Gustavo Costa is also a sound engineer and is responsible for the courses in musical production and acoustics.

The other faculty members that collaborate with the program either belong to other programs at the school or to other schools of IPCB. Invited guests usually teach the seminars.

C. Work done so far and work to be done

Since the creation of the program in Electronic Music and Musical Production there has been a fair investment in equipment and bibliography.

The facilities of the program include 2 classrooms where all the courses related to electronic music are taught and a MIDI/Digital audio studio. Each classroom has 5 iMac computers with several software related to electronic music composition — Pro Tools, Logic Pro, Ircam Forum package (all groups), Max/MSP/Jitter, etc. The MIDI/Digital audio studio has a Mac PPC G5 (2.33 Mhz dual processor), a Pro Tools system with a Digi 002, and a Kyma system. It has 4-track diffusion capabilities and is used for elaborate electronic music work, for audio post-production, and for simple sound capture projects. All the students in the program have access to the equipment without restrictions.

The school is currently building a recording studio that can record up to a symphony orchestra. The school counts with a large ensemble, symphony orchestra and several chamber music ensembles. This studio will be used and

maintained by the students from the electronic music composition and musical production program, to record and produce the local bands and record the school's orchestra, large ensemble and chamber ensembles. We expect that the studio will open in September and will be fully functional by the end of the year.

These past two years have therefore been dedicated to the creation of the infrastructure of the program in electronic music composition and musical production and constitute the first phase in the program development. We are currently passing to the second phase, which includes three main areas of development:

1. Continued development of the infrastructure in terms of equipment, bibliography, discography, and hiring of new faculty members;
2. Establishing contracts with local companies (media, computer-game developers, tv stations) to provide internships for our recent graduates, thereby giving the students a good first-employment opportunity;
3. Establishing contacts with similar study programs in public education institutions in Europe for ERASMUS-SOCRATES bilateral agreements for the exchange of students and faculty, and for the development of European partnerships for 2nd cycle study programs.

III. CONCLUSION

In this paper, we presented the program in Electronic Music Composition and Musical Production at the School of the Arts of the Polytechnic Institute of Castelo Branco. The website for the school (in Portuguese language) is <http://www.esart.ipcb.pt>.

With this studio report and presentation we hope to establish sincere contacts with other European institutions and people to help further develop this program by the establishment of ERASMUS-SOCRATES bilateral agreements, and for the eventual development of an European partnership for a 2nd cycle study program in electronic music and musical production.

REFERENCES

- [1] Instituto Politécnico de Castelo Branco. *International Students: ECTS General Information*. Instituto Politécnico de Castelo Branco, Castelo Branco, 2005
- [2] C. Guedes, *Mapping Movement to Musical Rhythm: A Study in Interactive Dance*. Ph.D. Thesis, New York University, New York, NY, 2005
- [3] C. Guedes. "Extracting musically-relevant rhythmic information from dance movement by applying pitch-tracking techniques to a video signal." *Proceedings of the Sound and Music Computing Conference SMC06*, Marseille, France, 2006, pp. 25-33