

ISTANBUL TECHNICAL UNIVERSITY ★ INSTITUTE OF SOCIAL SCIENCES

**A DESCRIPTIVE COMPARATIVE ANALYSIS AMONG UNDERGRADUATE
MUSIC TECHNOLOGY CURRICULA**

Ph.D. THESIS

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Music Department

Music Programme

APRIL 2015

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27 April 2015

İSTANBUL TEKNİK ÜNİVERSİTESİ ★ SOSYAL BİLİMLER ENSTİTÜSÜ

**MÜZİK TEKNOLOJİLERİ LİSANS EĞİTİM PROGRAMLARININ
KARŞILAŞTIRMALI BETİMSSEL ANALİZİ**

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Date of Submission : 26 March 2015

Date of Defense : 27 April 2015

To my mother, Şefika Yurdakul, who is my first and ever lasting music teacher ,

FOREWORD

This thesis is submitted for the degree of Doctor of Philosophy at Istanbul Technical University, Graduate School of Arts and Social Sciences. This research described herein was conducted under the supervision of Professor Şehvar Beşiroğlu in MIAM, Center for Advanced Studies in Music. The research along this topic started in 2009 and was designed to be completed by 2012, however has been completed in 2015. With employment prerequisites and circumstances for research assistants were changed by Istanbul Bilgi University, where I have been working as a research assistant in 2012, I had to extend my doctoral studies in order not to lose my employment. After this situation has lost its importance in September, 2014, I finally had the chance to finalize my thesis. This research has been kept alive by keeping the data acquired up-to-date, by upgrading the curriculum design model offered here accordingly and by adding new sections that cover the changes in curricula after 2012.

This work is original to the best of my knowledge, except where references are made to existing previous work. Neither this, nor any substantially similar dissertation has been or is being submitted for any other degree, diploma or other qualification at any other university.

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March 2015

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ABBREVIATIONS

AES	: Audio Engineers Society
App	: Appendix
BA	: Bachelor of Arts
BAPS	: Bachelor of Arts in Professional Studies
BM / BMus	: Bachelor of Music
BS / BSc	: Bachelor of Science
ECTS	: European Credit Transfer and Accumulation System
ERASMUS	: European Student Exchange Program
EU	: European Union
IET	: Institute of Engineering and Technology
IT	: Information Technology
ITU	: Istanbul Technical University
MEIEA	: Music & Entertainment Industry Educators Association
MIAM	: Dr.Erol Üçer Centre for Advanced Studies in Music (Dr.Erol Üçer Müzik İleri Araştırmalar Merkezi)
MIDI	: Musical Instrument Digital Interface
MA	: Master of Arts
MS / MSc	: Master of Science
MUE	: Music Engineering Technology
NASM	: National Association of Schools of Music
NYU	: New York University
SAE	: The School of Audio Engineering
S. DEMIREL UNI	: Süleyman Demirel University
TECH	: Technology
TMDK	: Türk Müziği Devlet Konservatuarı
TRT	: Turkish Radio and Television
UCAS	: Universities and Colleges Admissions Service
UK	: United Kingdom
UNI	: University
UNISTATS	: University Statistics
USA	: United States of America
YÖK / YOK	: Yüksek Öğretim Kurulu
YTU	: Yıldız Technical University

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A DESCRIPTIVE COMPARATIVE ANALYSIS AMONG UNDERGRADUATE MUSIC TECHNOLOGY CURRICULA

SUMMARY

This study aims to analyze and describe the status of four-year undergraduate ‘Music Technology’ curricula in Turkey in order to find out if they fit with the hypothesis that they do not include as many music technology category courses as their Western counterparts. The hypothesis first originated in the form of a curious idea which had its roots in personal correspondences of the author and his foreign colleagues who were graduates from foreign music technology departments. With the curiosity developed furthermore, after having a look at the music technology curriculums of Turkish universities, even without making any calculations then, it was noticed that the curriculums spared a great amount to subject areas like music theory and performance. This resulted in structuring a research around the subject to prove or disprove the hypothesis which led to this thesis study.

Undergraduate education in “Music Technology” and relevant curricula is internationally one of the most overlooked subjects in terms of research, except for a few publications. “Music Technology” is an interdisciplinary field of study rather than being “one” discipline and relates to and spans across a continuously expanding list of areas because of the swift developments in technology resulting in newly formed demand for music technology professionals who are able to work in these new areas. Moreover, each new occupation develops its own techniques and methods both in theory and practice which are to be learnt, studied and practically experienced. Music technology curricula has to correspond to these developments and adapt itself to the fast changing conditions in order to be able to successfully keep up with the requirements of close tracking the overall progress. This is even a harder task to perform for countries like Turkey because of the history of education is relatively newer than in the countries music technology education first originated. Additionally, the new and driving technologies generally neither are developed nor arrive here, thus become known and gotten familiar with soon enough to adopt into our curriculums. In addition to these challenges, there was too little written and researched over the issue. These altogether formed the main drive and necessity to define the status of Turkish undergraduate music technology curricula which is the main goal of this study.

In order to achieve the goal of describing where undergraduate music technology curricula currently stands, the music technology curriculums offered by seven Turkish universities were examined thoroughly and then compared to the foreign undergraduate music technology curriculums. The curriculums have been explored in terms of credit allocations to develop an understanding about how much of the curriculums are in closed contact with the recent developments in the area and the equivalent education in selected universities in United States and United Kingdom.

In examination, an inductive calculation method was used. Firstly, the courses that were included within the curriculums have been found out through internet survey and each course description was read. Secondly, credit allocation of each course in the curriculum was calculated in terms of credit weights in percentages. It became apparent that each course was found to belong either one of the eleven areas of study that were met during the curriculum exploration. Each of these eleven areas are called as a “course category” through out this study. All the courses were then listed and classified according to which course category they reside in. Then credit allocation per course category per semester was calculated in terms of credit weights in percentages. Finally, the results were summed up to find out the overall credit allocation per category within the four-year undergraduate music technology education of each university.

The foreign curricula of the selected six universities have been explored by using the same methods of internet survey research and inductive calculation. The calculated overall results of the foreign music technology curriculums were then compared to their Turkish equivalents. The findings from the comparisons among thirteen selected universities were presented and explained. Each program had their statements of education declared on their websites. Besides their curriculum calculated in terms of credit allocations per course and course category, each program was criticized whether their ingredients were sufficient to meet the statements of education about their aims, mission and vision or not.

The time of the research was extended more from what it was originally thought it would be. As a result of this, the presented curriculums had to be examined in the beginning of each academic year and were checked continuously for the changes in them that might have occurred. Consequently, it is found convenient to explain the results of the research into two time periods as being ‘before’ and ‘after’ 2012 with 2012 being the year most of the change in Turkish music technology curriculums have been concluded with. Eventually, the findings from both time periods the research has expanded into were compared, analyzed and described.

The hypothesis proved to be true for the Turkish music technology curriculums offered before 2012. However, for the period after 2012, the said curriculums have increased the courses in music technology by significant amounts by which their undergraduate education proved to get closer to those of their Western counterparts. Yet there were much to be done either by Turkish or foreign music technology programs when the recent developments in technology were taken into account in terms of how it affects today’s educational climate where learning now started to happen as an emergent process out of curiosity. Education is now moving toward a direction that it does not require a place, time or a “lecturer” as it does in traditional education, even though it seems it still needs curiosity, an access to internet and guidance to learn how to learn. The new ways of learning might soon replace the traditional education as having been discussed and set forth by the growing number of educational scientists. The traditional undergraduate education has to rethink, change and transform itself all over to cope up with the competitive educational developments and fast changing circumstances driven by the rapid progress in technology and a “reform” will soon not be adequate. A chapter criticizing the general traditional education as it now and discussing where the education will be like in the future is added to present the possibilities that might arise in music technology education. The ideas of “organic and living curriculum” are explained to support the idea of requirement to transform the traditional education. An alternative

modular undergraduate music technology curriculum model is proposed that could be of help in transitioning to the future of education and might act as a bridge between now and the future, easing the ways of transformation especially in a country like ours where traditions and conservations require way more time to be left and the resistance to change is greater than the Western world.

MÜZİK TEKNOLOJİLERİ LİSANS EĞİTİM PROGRAMLARININ KARŞILAŞTIRMALI BETİMSEL ANALİZİ

ÖZET

Bu çalışma ile Türkiye’deki dört yıllık müzik teknolojileri lisans eğitiminin içeriğinin betimlenmesi hedeflenmiş ve sunulan eğitim içerikleri birbirleri ve dünyadaki örnekleri ile karşılaştırmalı olarak değerlendirilerek betimlenmiştir. Çalışmanın başında, Türkiye’deki müzik teknolojileri lisans eğitimi veren kurumların dört yıllık ders planlarında “müzik teorisi ve performans” alanlarına ait derslerin “müzik teknolojileri” alanındaki derslerden daha fazla yer tuttuğu gözleminden hareket edilerek, bu gözlem bir hipotez olarak verilmiş, çalışmanın devamında ise hipotezin doğruluğu veya yanlışlığının ortaya çıkarılması için bir araştırma yürütülmüştür.

Araştırma, 2012’den önce ve sonrası olmak üzere sonuçları ile birlikte iki bölümde anlatılmaktadır. 2012 yılı öncesi için araştırmanın evreni, Türkiye’de “müzik teknolojileri” bölümü olan veya müzik bölümleri içerisinde “müzik teknolojileri” eğitimine ağırlık verdiğini belirten yedi üniversitenin ilgili bölümleri ile yurt dışındaki benzer eğitim veren seçilmiş altı üniversite olmak üzere toplamda on üç kurumdan oluşmaktadır. Araştırma, yurt içinde müzik teknolojisi veya müzik teknolojileri adları altında programları bulunan kurumlar ile program adları müzik teknolojisi olmasa dahi, programları incelendiğinde kapsam bakımından müzik teknolojileri eğitimi verdiği anlaşılan ve/veya kurumun bizzat kendisi müzik teknolojileri eğitimi verdiğini internet sitelerinde belirten bölümleri kapsamaktadır. Yurt dışındaki lisans derecesi ile müzik teknolojileri eğitimi veren kurumlar, tezin ilgili bölümlerinde anlatılmış olan belirli kriterlere dayanılarak seçilmiş ve ders programları ayrıntılı olarak incelenmiştir.

2012 yılı sonrası dönem içerisinde yurt dışındaki okullar 2012 yılı öncesinde olduğu üzere halen araştırma evreni içinde kalmakla birlikte, yurt içindeki kurumlardan birisi müzik teknolojileri eğitime son verdiği, bir diğeri ise müzik teknolojisi alanında eğitim vermediği araştırma bulguları ile anlaşıldığı için çalışma evreni dışarısında bırakılmıştır.

Araştırmanın ana yöntemi, seçilmiş bölümlerin lisans seviyesi ders programlarının içerdikleri derslerin, müzik teorisi, performans, kompozisyon, müzik tarihi, müzikoloji / etnomüzikoloji, YÖK dersleri, müzik teknolojileri vb. ders kategorileri altında alanlara göre sınıflandırılarak her sınıfa ait derslerin lisans programı içerisindeki toplam kredi ağırlıkları bakımından karşılaştırmalı olarak incelenmesi olmuştur. Aynı yöntem ile yurt dışındaki eşlenik bölümlerin ders programları da incelenmiştir. Bu incelemeler 2012 yılı öncesi ve sonrası dönemlerin her biri için gerçekleştirilmiş ve gerek bu iki dönemin kendi içerisinde gerekse aralarında müzik teknolojileri programlarının benzerlik ve farkları tanımlanmıştır. Yapılan incelemeler ile müzik teknolojisi bölümlerinde hangi derslerin verildiği, zaman içerisinde programların yurt içinde ve dışında ne kadar değiştiklerinin betimlenmesi

hedeflenmiştir. Bulgular her iki dönem için araştırma sonuçları olarak verilmiştir. Bulgular ile çalışmanın başında öne sürülen hipotezin doğru veya yanlışlığının ortaya çıkarılması amaçlanmıştır.

Üniversitelerin müzik teknolojisi eğitim programlarına ilişkin ders içerikleri ve veriler her akademik yılın başında güncellenen internet taraması metodu uygulanarak toplanmıştır. Toplanan veriler tümevarımsal bir yaklaşımla öncelikle dönem başına düşen bireysel ders kredi ağırlıkları, daha sonra derslerin bağlı bulunduğu ders kategorileri başına dönem toplamı olarak hesaplanarak değerlendirilmiştir. Bu değerlendirmenin sonrasında ders kategorilerinin kredi ağırlıkları tüm lisans programı için hesaplanarak toplam sonuçlara ulaşılmıştır. Çalışma başında sunulan hipotez 2012 yılı öncesi için bu sonuçların karşılaştırmalı analizi ile genellere doğrulanmış olmaktadır. Bu doğrulamaya ilişkin rakamlar ve sonuca nasıl varıldığı tezin ilgili bölümlerinde ele alınarak açıklamalı bir biçimde tablo ve grafiklerle birlikte sunulmaktadır.

2012 yılı sonrasında ders programlarında yapılan değişiklik ve geliştirmelerin bir sonucu olarak, ülkemizdeki müzik teknolojileri lisans programlarına bölümler tarafından müzik teknolojileri alanında daha fazla sayıda ders eklenmiştir. Bu yeni derslerin eklenmesi ile birlikte, hipotezin doğruluğu 2012 yılı sonrası için geçerliliğini yitirmiştir.

Yapılan literature taramalarında, müzik teknolojileri lisans eğitiminin içerikleri konusunda yurt içi veya dışında çok fazla bir araştırma yapılmadığı ortaya çıkarılmıştır. Kredi ağırlıklarının bulunarak ders programlarının karşılaştırmalı analizi yöntemi ile yapılan ilk çalışma ise bu tez çalışmasıdır. Çalışma boyunca ders programları içerikleri dışında, programları sunan bölümlerin eğitim yaklaşımları, amaçları, vizyon ve misyonlarının sundukları programların içerikleri ile ne denli örtüştüğü konusu ele alınmıştır.

Yukarıda anlatılan bakımlardan, araştırma betimsel ve eleştirel bir bakış açısı ile yürütülmüştür. Araştırma bulguları, sonuçları ile birlikte bu tez çalışmasında sunulmuş; bugünkü müzik teknolojileri programlarının gelişen teknolojilerin şekillendirmesi ile henüz ortaya çıkarak değişip dönüşen “yaşayan organik ders programları” gibi yeni eğitim yaklaşımları, dinamik yeni eğitim uygulamaları ve yeni rekabet koşullarında varlıklarının sürdürülebilir olup olamayacağı geleneksel eğitimin durumu genelinde tartışılmış; değişim sürecinde geleneksel ile yeni arasında bir geçiş adımı olarak kullanılabileceği düşünülen alternatif bir modüler eğitim programı tasarım modeli müzik teknolojileri lisans eğitimi özelinde önerilmiştir.

Önerilen modüler eğitim programı müzik teknolojileri lisans eğitimini zaman bakımından iki ana evreye ayırmaktadır. Eğitimin birinci evresi, dört yıllık lisans eğitiminin ilk yılını kapsamakta ve zorunlu ana derslerden oluşmaktadır. Bu ilk evre, şu anda Türkiye’de mevcut olan müzik teknolojisi lisans eğitim programlarının hiçbirinde verilmediği araştırmalar sonucunda anlaşılmış olan fakat araştırılan yurt dışı eğitim kurumlarının hepsinde verilmekte olan temel fizik ve matematik gibi dersleri de içerecek şekilde tasarlanmıştır. Modüler eğitim programının zorunlu derslerden oluşan ve dört yıllık müzik teknolojileri lisans eğitiminin ilk yılını kapsayan bu ilk evresini, geriye kalan üç yıllık eğitimi içeren ikinci eğitim evresi takip etmektedir. İkinci evrede öğrenciler, diledikleri alanlardan diledikleri dersleri almakta özgür olup, bu derslerin hiçbirisinin birinci evreyi başarıyla tamamlamış olmak dışında bir ön koşulu bulunmamaktadır. Kurum için ise böylesi modüler bir programı uygularken göz önünde bulundurulması gereken şartlar mevcuttur.

Önerilen modüler programın öğrenci odaklılık, esneklik ve gelecekte ortaya çıkacak özellikle çevrim içi eğitim gibi yeni eğitim modellerine kolay adaptasyon sağlanabilmesi gibi amaçlarının kurum tarafından da gözetilmesi ve bu amaçlara ulaşılabilmesi için modüler eğitim içeriğinden ders seçen öğrencilere doğru danışmanlık hizmetlerinin verilmesi gerekmektedir. Kurum tarafında gözetilmesi gereken bir diğer konu ise yeterli sayı ve çeşitlilikte dersin müzik teknolojileri eğitiminin interdisipliner özelliğini karşılayacak şekilde eğitim programı içerisinde bulundurulmasıdır. Kurumun önerilen programı uygularken göz önünde bulundurması zorunlu olan bu konuları ve ihtiyaç duyacağı kaynakları, üniversitenin mevcut yapısı içerisinde nasıl sağlayabileceği konularında da yeri geldiğinde öneriler getirilmiştir.

Tez, gelecekte eğitim programları konusunda yapılması olası çalışmalar için öneri ve görüşlerin sunulması ile birlikte çalışma sonlandırılmıştır.

1. INTRODUCTION

“Music Technology” has a structure that embraces and combines the fields of technology and music. Therefore, “Music Technology Education” can be referred as to being highly “interdisciplinary” which has both engineering and musical aspects. Technology is application of knowledge to the practical aims of human life or to changing and manipulating the human environment. Technology includes the use of materials, tools, techniques, and sources of power to make life easier or more pleasant and work more productive [1]. Technology, when semantically approached, includes both “knowledge” and “action” which can be interpreted as to correspond to “science” and “engineering” aspects of it.

“Music,” combined with “technology,” then, should imply the science and/or engineering of/related to music. “Music Technology” therefore could be thought as a term that refers to all forms of tools, materials and their *usage* in the musical arts, particularly *the use of* electronic devices and computer software to facilitate playback, recording, composition, storage, and performance. The terms '*usage*' and '*use*' here refers to the 'action' aspects of the definition of technology, which one can also be interpreted as being the 'practical' or 'implementation' side of technology. Furthermore, music technology surrounds the technical and scientific aspects of the music such as acoustics, programming, production and music industry business practices, which point out the “knowledge” aspect of technology. The concept of music technology is intimately connected to both musical and technological creativity. Hence, “music technology” education should include both theoretical and practical aspects. People are constantly striving to devise new forms of expression through music, and physically creating new devices to enable them to do so [1]. The process of creating new devices while seeking for forms of expression has also accelerated resulting from the gained speed of technological developments in the 21st century. Because of these, our definition of what music technology encapsulates must also continually expand.

Since technology began having more effect on the production, access, and consumption of music, there exist music technology departments in universities that aim to give education on sound engineering and the tools and techniques that are being used to create the production of music. Being a technical craft born in Western culture, mainly in Europe and North America, the literatures of reference on music technology and the educational curricula on the subject are mostly originating from countries of the same area. As a natural consequence of this constellation, Turkey stands in an “in-progress” situation in terms of educational development in music technology. In my opinion, this standpoint might well be approached as an advantageous one with the proper use of the accelerated access to knowledge and technology in the information era that we currently live in. Turkey has relatively a shorter history in this respect and has very little literature on the subject. Exchange of knowledge in music technology therefore mostly takes place at online forums, and through oral tradition among industry professionals who acquired their skills through practice in the music industry - be it recording studios, broadcasters and the like. Having experience in the industry is of indisputable significance at the subject matter of music technology especially sound engineering. Yet, theoretical knowledge has started to be highly demanded also by the industry, which has been cultivating its professionals itself and raising them from the ranks. Graduates from music technology and sound engineering programs has started to prove the benefits of theoretical knowledge among the industry and the concept of “academically educated industry professional” has started to get to be known and understood better and sought for. The same applies also for Turkey. Yet, the reputation of educated professional is relatively new to Turkish industry and the music technology departments should take the issue in hand and university-industry partnerships have to be developed.

Music Technology education in Turkey in undergraduate level has almost about a twenty-four year old historical background therefore can still be considered as being relatively ‘new’ compared to the western rest of the world where it has started to be adopted as early as 1940’s. The four-year music technology education in Turkey seems to be evolving at one hand; however, the programs offered by Turkish universities in the field seem to have a tendency towards ‘music’ compared to ‘technology’ aspects of the curriculum. However, the undergraduate music

technology programs in the United States and Europe has an inclination towards the opposite direction. This study aims to set forth the differences between the four year curriculums offered by selected ‘music technology’ departments in Turkey and abroad. The disciplines and fields of instruction covered by the curriculums are categorized and then analyzed by their credit weights they have within the four-year educational program of each separate department. The statistical data are presented as graphical charts and worksheets to demonstrate the status of the education in the field. By means of comparative analysis among the data collected, an alternative modular curriculum design is proposed.

1.1 Purpose of Thesis

Survey and analysis resulting in defining the status of undergraduate music technology curriculums in Turkey form the subject of this thesis study. The aim of the study is to reveal the differences and resemblances among various music technology curricula, which is thought to be of the main step with utmost importance in describing current undergraduate music technology in Turkey. A secondary purpose along with the primary purpose of comparison and evaluation is hence to offer an alternative four-year undergraduate curriculum model that could be implemented and tested by music technology departments in Turkey.

1.2 Hypothesis

In the beginning of the research that started in 2009, the question if the music technology curriculums in Turkey included as many ‘music technology’ courses as the ‘music’ courses that they offered was put a lot of thought into. Over deciding to conduct research over this problem to find out the answer to and either to be validates or falsified, the hypothesis that the undergraduate music technology curriculums offered by ‘Music Technology’ departments in Turkey do not offer as many classes as to fulfill the ‘technological’ and ‘engineering’ aspects of music technology education was developed. They should have been sparing more credits for the ‘music’ aspect of education as it is concluded from personal informal conversations with colleagues from other countries. On the other hand, these conversations were pointing to their Western counterparts as being inclined more towards the technological aspect with the courses they were told to be offering. It is

thought that it was possible to validate these propositions put forth above by making a comparison and quantitative ratio analysis among each of the curriculums' credit weights in terms of the categories of disciplines and courses they include. All these assumptions were thought possible to be proved either true or falsified with a research that would involve data collection, comparison, and evaluation.

Another proposition that was made was that the music technology would possibly be in relation to more disciplines in the future due to the developments in technology, resulting in the expansion of the demands from the related industries, which could require more diversity in terms of courses included in music technology curriculum. The curriculums might need to be adjusted accordingly as to offer more courses for enabling future students to specialize in more numbers of music technology related fields. If assumptions needed to be made then, the curriculums were thought to offer electives that are more general at first in order to fulfill this need and they would have to become modular as maybe to include a number of tracks within music technology in a more distant future. This could also be thought as an evolutionary process along time, which would result in more disciplines to be born out of music technology just as the music technology was born out of tonmeistering practices.

To sum up, this research would try to find out and provide an answer

- if Turkish undergraduate music technology curriculum includes as many courses in 'music technology' area as it has 'music' field in general,
- if foreign undergraduate music technology curriculum differs greatly from Turkish one,
- If music technology curriculum would adopt more courses related to emerging areas that interacts music technology because of the recent technological developments.

1.3 Research Design

The research to achieve the goal of either proving or disproving the hypothesis was designed as to follow these steps in order to determine the course of the study:

- Setting the focus and framework of the study
- Setting the research timeline

- Defining the research universe or the field the research would be conducted
- Data collection
- Data evaluation and comparison
- Evaluation of the findings
- Designing an alternative curriculum model as a proposal over achieved results
- Concluding the study by describing the results and recommendations for further study

The listed steps that are included within the process of research designation are described in detail in the following sections.

The research is divided into two periods being between 2009-2012 and 2012-to present. The selected undergraduate music technology curricula were examined and evaluated within these periods. The reason for such a division of timeline mainly resulted from the extension of the research period for some unexpected developments happened in the career arena for the researcher. However, year 2012 than happened out to be year where most changes have taken place in Turkish music technology curricula which might partly be due to the completion of the harmonization process into Bologna standards, the employment of recently graduated academicians and partly for some other reasons.

Before 2012, ten of all the universities in Turkey had eleven music technology departments or pathways within the music departments, four of which had been formally founded but had not started education, one operating under another name, and one of them being a master's program. Regardless of the name these departments and programs have, the undergraduate programs among them were thought to be possible to be evaluated within the scope of this dissertation study due to their curriculum, mission and goal statements or if it was decided by the researcher that it was of significance to any aspect of the subject of this study. For example, Yildiz Technical University offers a program called "Audial Design," which is operated under "Department of Music and Performing Arts" which would be analyzed because this program stated one of its missions as "educating music technology practitioners" [2], which was in the context of this dissertation, and that is why it was

included in the first phase of the study. However, after the credit allocation analysis, this particular program has not been followed any further because it has been found out that the program did spared only 0.8% of its overall undergraduate curriculum to music technology.

Malatya Inonu University (Faculty of Fine Arts, Department of Music, Music Technology Division), Sivas Cumhuriyet University (Faculty of Fine Arts, Department of Music, Music Technology Division), Izmir Dokuz Eylül University (Faculty of Fine Arts, Department of Musical Sciences, Music Technology Division), and Isparta Süleyman Demirel University (Faculty of Fine Arts, Department of Music, Music Technology Division) had similar programs and clear divisioning within departments nearly having the same kind of organizational structures. These universities were included in the field of this study and they differed from the other universities counted below in this aspect.

Istanbul Technical University also has a division named “Sound Recordings,” operating under the “Department of Music Technologies” of the “ITU State Conservatory of Turkish Music” and is included in the study.

Istanbul Bilgi University also does not have a separate program named as “Music Technology,” but it has a Department of Music and music technology is one of the pathways the students choose to follow for specializing in the field. Because of the relevant curriculum it has to the subject of this study and of the facility opportunities it harbors, even though it is not a program but a pathway, this university is also included in the study.

Giresun University (State Conservatory), Cankiri Karatekin University (Faculty of Fine Arts), and Sakarya University (State Conservatory) were the universities where Departments of Music Technology were founded, but not operating yet. Hence, they were thought to only be included in the field of this study incase either they start education or any relevancy would have occurred between their circumstance and the subject of this dissertation during the time of the study. Nevertheless, none of these circumstances has occurred and these programs have not been activated as of 2015.

The private institutions that offer music technology education in Turkey and were not selected to be a part of this study are Istanbul Galatasaray ITM (Departments of Sound Engineering and Sound Production), SAE Istanbul (Audio Engineering

Course), and Istanbul Modern Music Academy (Sound Technology and Music production Program). These are mostly certificate programs (full-time or part-time) with opportunities of on-going education, workshops, and corporate programs. The subject framework for this study is the undergraduate curricula and these private certificate institutions are excluded from this framework. The programs offering graduate education leading to a Masters degree offered by Bahcesehir University and ITU are also excluded because they are beyond the scope of this study.

Music Technology Departments abroad are selected after a comprehensive research and according to the criteria told below. The first of the criteria in selection is the undergraduate degree that they are expected to offer. Second of the criteria is the institution's recognition and reputation in a ranging arena from being academic to industrial. A third criterion, which has a role in selecting an institution abroad to be a part of this study, is the accessibility to the required information. The universities which match the criteria among a long list of previous candidates are: NYU Steinhardt (New York University, Steinhardt School of Culture, Education and Human Development, Department of Music and Performing Arts Professions, B.M. in Music Technology), Capital University (Bachelor of Arts in Professional Studies/ Music Technology), Northeastern University (College of Arts, Media and Design, Department of Music, BS in Music Technology program), University of Miami (Frost School of Music, Department of Music Media and Industry, B.S. in Music Engineering Technology) and Birmingham City University (Faculty of Technology, Engineering & the Environment, School of Digital Media Technology, The BSc, Music Technology program).

Currently as of 2015, there are only four dedicated music technology departments in ITU, Inonu, Cumhuriyet, and Dokuz Eylul universities that offer full curriculum in music technology.

Since the research requires ongoing data collection and constant comparison, it was envisioned that such “retrospective” and “prospective” analysis process might begin during data collection as the data already gathered would be analyzed and the subjects due to this process might shape the ongoing data collection. Among these subjects, the ones that are focused to form the center of this study can be listed as follows:

- a) All documents of data that might give the necessary valuable information about the history, establishment, curriculums, and ongoing execution of “Music Technology education” in Turkey and abroad within the framework of listed field and scope of the study.
- b) Comparison of the local undergraduate music technology education with the corresponding education alike in selected foreign universities in terms of credit allocations and along time.
- c) The continuous evaluation and analysis of the gathered data via updating the data collection through internet survey, regrouping variables, and re-evaluation. Stating the differences and resemblances among curriculums in terms of credit allocations per course group categories derived from the collected data.
- d) The reasons and causes in curriculum decision-making processes are not a key focus subject to this study.

Supporting disciplines whose methods were used are social sciences, curriculum studies, critical studies, critical pedagogy, musicology, music pedagogy, fieldwork, and statistics.

1.4 Data Collection, Literature Review and Evaluation Methods

This study is a descriptive one and is structured basically as research and analysis. It can be evaluated as having a mixed study design, making use of methods from case studies like description, exploration, explanation, and comparison based on quantitative data interpretation and gathered from the expanded longitudinal research in the field of internet. On the other hand, it uses quantitative methods to interpret the data and derives both quantitative and qualitative conclusions from data observed throughout time as a result of these explorations.

A secondary product of the study is a modular curriculum design as a proposal for undergraduate music technology curriculum, which took form as a result of these research and analysis processes along with considerations of future assumptions that would be required by the field of music technologies due to technological developments and the industrial needs. The data collection strategy during the research process is framed with fundamental methods being literature review, continuously updated internet search, observation, comparison through analysis and evaluation, which are explained thoroughly in the following sections.

Catalogs of university libraries, symposium notes and declarations, articles and online e-reference databases were reviewed to find relevant information about the history and formation of music technology education and curriculum studies in general. The resources that are and could be of the subject of courses and used as a course material are reviewed and utilized as a source for educational and curricular refinement. Industrial and technological advances in and/or related to the field and/or sub-fields of music technology are continuously followed via forums, music tech magazines and other periodicals, which can be of importance to the issue.

The literature, symposium notes, articles, and recent developments on curriculum studies are reviewed for achieving knowledge and forming criteria on establishing, execution, and evaluation a curriculum. The literature review on the subjects listed above and the currently unpredictable ones which were thought to come up to be relevant later on after the starting phases of the study were continuously updated, not only during the research stage of this study but also throughout the overall period of time this study has endured.

It is found that there is too little research conducted and publications were made in the subject of music technology education. The main studies and publications that were made use of when describing and setting the framework of the status of current music technology education were those of Carole Boehm (2007) and Cihan Isikhan (2012 & 2013). Boehm (2007) presents an overview of the situation of integrating “Music Technology” as an interdisciplinary field into existing academic ‘discipline-segregated’ structure and discusses the challenges in such integration. I have evaluated the taxonomy of the course categories set forth by Boehm (2007) and interpreted them along with data emerged after the list all the courses offered by the universities I selected. These contributed altogether in grouping the courses into the eleven course categories offered by Turkish universities. Isikhan’s publications are more descriptive rather than being critical, in terms of the historical development of music technology education with a particular emphasis on Dokuz Eylul University Music Technology department’s implementations. His studies helped my research to understand, analyze, and generalize the status of music technology education in Turkey the most, partly because Dokuz Eylul University has first and the oldest music technology program in Turkey.

Despite the fact that proposing an alternative curriculum model is not the main focus of this study, works and ideas of critical pedagogy and postmodern education regarding curriculum design was made use of although not intensely. However, I have always been impressed by the ideas of critical pedagogues like Paulo Freire, Ira Shor, Henry Giroux, etc. regarding liberating the education towards more freedom into students' side which might I might have reflected on the modular curriculum design model I offer within this study. Yet, the modular curriculum design is influenced more by the ideas of Young (2002) regarding the curriculum of the future and the living 'organic' curriculum and 'emergent curriculum' approaches which is adapted by extending number of schools and colleges. I have found out that Lightfoot's (2006) modular curriculum design proposal could form a basis and starting point, which is convenient and flexible enough to meet my requirements I had of my influences.

The internet review a form the backbone of this research study for the aim is to describe and criticize the music technology curriculum in a way that has never been done before. The official websites of the related universities were the main source of data and were continuously followed for any change or updates thought as possible to occur during the time of the study. Curriculums of the music technology departments and programs were accessed from the worldwide web, unless they were up to date. If they were not updated, then required documents and materials were requested via email correspondence although usually the correspondence returned course descriptions. At the beginning of each academic year, all the course descriptions were read and analyzed repeatedly to detect any possible changes and to be able to categorize the courses.

Being a descriptive and continuous research study, one might also be interpret this dissertation as depending upon a kind of fieldwork for a number of reasons. Firstly, the continuous observation vie internet research took place throughout the time of the study about how the music technology programs are executed and how they reacted to the changes in technology, how they sought for progress and the transformation taking place to achieve the goals of reforming the curriculums. Turkish universities, which have a music technology department, were visited and unstructured interviews were conducted. In case the websites of the music technology departments which are

main sources of data can be approached as a field that is continuously observed, then it could be possible to call such a study as being conducted in ‘the field’.

Secondly, this project required continuous updating to be conducted and done because of its nature depending upon an interim analysis and being strongly bound to most recent technological developments. Since the author of this dissertation is also a research assistant in the field of music technology in Bilgi University, Department of Music, he had the chance to observe and actually participate in the recent developments in terms of the curriculum not only in his university but also in the other universities in Turkey that offers music technology programs. Additionally, he has participated in curriculum development activities in Bilgi University Music Department actively.

The collected data is explored inductively using content analysis to generate categories of course groups offered in the music technology curricula. All the data relevant to each category is identified by using ‘constant comparison’ processes, in which each item is checked or compared with the rest of the data to establish analytical categories. As in much of the qualitative researches, it is envisioned that the analytical process might begin during data collection as the data already gathered will be analyzed and might shape the ongoing data collection. Since such continuous analysis is almost inevitable in qualitative research because the researcher is “in the field” collecting the data, it is impossible not to start thinking about what is being heard and seen; the analytical process might be named as a “nonlinear-sequential” analysis. Although this study does not strongly claim to achieve any generally valid statistical conclusions that are valid for all music technology curricula offered around the world, it makes use of statistical data for comparison and derivation of results valid for the selected curriculums offered by selected universities.

An inductive calculation method was used to evaluate the data derived from the courses that were included within all the selected undergraduate curriculums. Credit allocation per course was calculated in terms of credit weights in percentages using arithmetic mean. Each course was found to fall under one of the eleven course categories that were met during the curriculum exploration. Credit allocation per course category per semester was calculated in terms of credit weights in percentages. Finally, the results were summed up to find out the overall credit allocation per category within the four-year undergraduate music technology

education of each university. Both foreign and Turkish curriculums were explored thoroughly using these methods. The calculated overall results of the foreign music technology curriculums were then compared to their Turkish equivalents. The findings from the comparisons among thirteen selected universities were presented and explained.

Additional comparison also took place because of the extended duration of the study. It is found convenient to elaborate the results of research into two as being ‘before’ and ‘after’ 2012 with 2012 being the year, most of the change in Turkish music technology curriculums have been detected. Eventually, the findings from both periods the research has expanded into were compared, analyzed, and described in the conclusions section.

All the data calculated and resulting in the comparative analysis were presented as tables, charts, and figures for the ease in description and for further interpretation.

2. COMPARISON AMONG MUSIC TECHNOLOGY CURRICULUMS

The comparison among the music technology departments has been made in two chronological phases during the course of this study and is composed of two main periods in these terms:

- a) First period of research has been conducted between 2009-2012,
- b) Second period of research has taken place between 2012 up to current time.

The spanning of the study through such a wide period has made an important effect on the findings due to ongoing development in both technological and educational means. The curriculums that have been scanned in the first period have changed in significant amounts in terms of credit allocations, which are the main instruments that are used to make the comparison among the curriculums. Therefore, it is found appropriate to mention the said periods in two main sections, which one can easily grasp the differences among the curriculums that occurred during the whole process of the research.

Besides being sectioned in terms of time, the comparison process is designed as being sectioned also by the selected universities that offer the music technology education. Each program is described by the statements about its educational outcomes, the courses it is formed of and the credit loads of these courses. The courses are grouped into categories according to the common disciplines they refer. The semesterly and overall four-year credit loads are compared in percentages and presented with in-text pie charts and tables in the appendices, which belong to the first chronological period (2009-2012), mentioned above aiming to establish a better understanding of the comparison. The comparison after that time (2012-current) is discussed only in terms of the changes in overall credit loads of the curriculums.

The first school known to include “Music Technology” in its curriculum is Detmold Hochschule for Music of Paderborn University in Germany. The bachelor degree program was called “Tonmeister Diplom” program back in 1949 when it was founded. As mentioned by Isikhan (2012, p.157), the ‘tonmeistering’ schools started

to raise in number first in Germany around 1950s and Britain to be the first, these schools spread among European countries in 1970s [3]. SAE (Sound and Audio Engineering) International was founded in Australia by sound engineer Tom Misner in 1976 and now has more than 52 campuses in 23 countries around the world. SAE also operates in Istanbul today as a private institution with a certificate program. Today, SAE has become an established institution that reflects the best practice the music technology schools need to form their educational programs [4].

On the other hand, instrument making, if considered as one of the subfields of music technology, has relatively a longer history than sound engineering in terms of being adopted in academic education. As stated by Alaskan (2013, p.178), the first Instrument making school in Turkey has been founded as a branch of Gazi Terbiye Institute in 1942. The first scientific instrument making activities have been given a start in 1960s when the famous German string instruments maker Christian Schertel has been brought to Ankara. Cafer Acin, one of Schertel's students has founded Instrument Making Department in ITU State Conservatory in 1976 which still operates as a division under ITU's Music Technology Department along with the division of Sound Recordings [5]. The Instrument Making divisions / departments of Turkish universities are not included within the scope of this study for the area of education they execute is a very specific one within the broader field of music technology as understood today and it is not possible to compare broad education with a specific specialized one. Additionally, ITU is the only example that resides the instrument making within music technology department.

The traditional job description of sound engineers as artistic recording directors of music productions is continuously expanding, which is attributable to the increased integration of multimedia technologies. This means that the profession "sound engineer" nowadays also applies to the theatre, film, and television media, where competent professionals with a trained ear are often needed in the sound department. Spreading to the world after 1950s under the name "tonmeistering" as originated in Germany and then translated into English as "sound engineering" during its propagation in Britain and United States, the music technology currently is being split up into more specialized fields emerging from the most recent developments in all the disciplines, mainly in computer science, it is involved with. Nowadays, as stated by Boehm (2007, p.10), 63 different names used in all of the degrees in UCAS

list adhering to more specialized fields of music technology are also mentioned in the following chapters of this study [6].

The first music technology program in Turkey is DEU. In 1976, Prof. Dr. Gultekin Oransay, the founder of Faculty of Fine Arts and Musicology (back then in Aegean University), has aimed to include some “tonmeistering” courses in the curriculum, however this could not been realized up until 1991. As stated by Isikhan (2013, p.108), with the official name ‘Electro-Acoustic Sound Technique’ was adopted as an option degree in 1991 by DEU in order to realize what has been planned but could not have been realized back in 1976. This optional degree was too much like a tonmeistering program and has been to become a music technology program by name and status in 1996. Since 2008, this first program has finally evolved and become ‘Music Technology Division’. The division has formed the curriculum by taking SAE as an example [7].

DEU is the first institution to offer undergraduate degree in music technology in Turkey. It can be considered a pioneer in the field and it has formed an example to the successors like Inonu University, Cumhuriyet University, and Suleyman Demirel University. It can be said that the music technology as an undergraduate level academic education in Turkey has started with DEU in 1991 and started to be included in other programs mainly in 2000s. There is not sufficient information about the exact dates of establishment about these institutions online. Currently, music technology education is adopted by both state and private universities in Turkey either as a department or a division or in the form of some courses adhered to the field. There are also two institutions, which have competent master degree programs, namely MIAM and BAU. SAE only acts a private institution, which has certificate programs, there are also other private courses like Galatasaray ITM, Modern Music Academy, and smaller courses run by private recording studios.

2.1 Undergraduate Curriculums in Turkey (2009- 2012)

In this stage of the study, the undergraduate music technology curricula of the seven universities have been analyzed and compared in terms of credit load. The tense of language has been left as it was written during the time of the research and is in “present” tense as it was valid at the time of the writing. The said seven universities are shown in Table 2.1. As it can be seen in the table, the organizational structure

changes from university to university. Two of the universities, namely Dokuz Eylul and Inonu host Music Technology as a separate division within music or musical sciences departments, which function under the Faculty of Fine Arts.

Table 2.1 : Undergraduate Music Technology Programs in Turkey

UNIVERSITY	FACULTY/ SCHOOL	DEPARTMENT	DIVISION / PROGRAMME
Dokuz Eylul	Fine Arts	Musicology	Music Technology
Inonu	Fine Arts and Design	Music	Music Technology
Cumhuriyet	Fine Arts	Music Technology	Music Technology
Istanbul Technical	State Conservatory of Turkish Music	Music Technologies	Sound Recordings
Suleyman Demirel	Fine Arts	Music	Music Technology
Bilgi	Arts and Sciences	Music	Music
Yildiz Technical	Art and Design	Music and Performing Arts	Audial Design

Cumhuriyet University has a separate department of Music Technology, which is hosted by the Faculty of Fine Arts. Further discussion will be available on the following pages while analyzing the curriculums in detail.

Suleyman Demirel and Bilgi universities both have music departments, which host musicology and music programs respectively and are alike in the way that students have opportunity to design their education by choosing from a wide variety of elective courses. However, they also differ from each other in a number of ways.

Firstly, Suleyman Demirel University's Department of Music is founded under the faculty of fine arts, where Bilgi University's Department of Music is under the Faculty of Arts and Sciences. Secondly, as published by Suleyman Demirel University's website in English, "Department of Music consists of Musicology, Music Technology, and Performance which are under the Music Program." This expression falls short to fully explain and be clear about whether "Music Technology" is a program or department.

The paragraph goes on like, "The students who specialize in these sub-fields are called as by the order of music researchers, tonmeisters, and soloists." This sentence, referring the previous group of areas here as "sub-fields," takes the inexplicit expression one-step further. On the other hand, the following paragraphs refer to

each of these areas clearly as “department.” As for Bilgi University, the approach followed by the Department of Music is stated by the program coordinator as follows,

Nowadays, musicians have to be competent at a variety of areas that are related to, yet different from, one another as a result of cultural and technological developments. For this reason, taking into consideration that all the processes to convey an original musical thought to the listener stand within the occupational area of the musician, the Department of Music of Bilgi University aims at enabling the students to have all the necessary skills to compose, record, produce and play. It is expected from the prospective students that they address ‘music’ with such integrity and be interested in this ‘integrity’ itself [8].

As understood from the statements above, the education the Department of Music of Bilgi University is defined by the word ‘integrity’. The music education offered in Bilgi is one which aims to make the students have skills in a broad range of areas which will enable them to write, produce and perform their music. The curriculum design with an intentional emphasis on electives show resemblance both in Bilgi and Suleyman Demirel universities’ music departments, yet the function of the overall education is very different in the sense that Bilgi goes for integrity while Suleyman Demirel goes for specializations. Further discussion will be available on the following pages while analyzing the curriculums of both universities in detail.

State Conservatory of Turkish Music in Istanbul Technical University has Music Technology as a department, which consists of two main divisions: Instrument Making and Sound Recordings. Sound Recordings division will be a subject in this study because of the comparability of its program to the other programs of the other universities. Likewise, instrument-making division will not be considered for research because of comparability issues.

Yildiz Technical University’s Audial Design program under the department of Music and Performing Arts stands at a very different platform from the other universities by the course content and curriculum structure. Although not identified as such at the very beginning of the study, the progress has been made clear that this program is also not comparable to the others mainly because of the way that the core courses has been described. Further information about this will be given in detail in the following sections where all the courses from all the programs will be discussed on a semesterly basis.

The objectives planned to be reached at the end of the undergraduate study in music technology or the selected related programs differ from one institution to the other. At this point of the study, it is considered essential to leaf through each individual institution's own statements as to what their education will bring the students in order to have an understanding and be able to interpret and establish the relationship between their curriculums and the expected outcomes of them.

2.1.1 Statements of education

2.1.1.1 DEU, Music Technology Division

With its Musicology and Music Technology programs, the Department of Music aims to train scientists in Musicology and Music Technology specialists. Musicology program provides the students with the methods, techniques and the cultural background that is required to analyze music as an art and a cultural fact. Music Technology program trains specialists who will be working in the technological stages of music production as in recording studios, live sound, broadcasting, computerized music production etc. [9]

As directly taken from its website in English, the eventual point of destination after the educational period is the students' becoming 'trained specialists', or to put it in other words, people who are specialized in fields like the so-called 'tonmeistering'. The expression about what Music Technology program trains the students about can be interpreted in the way that the undergraduate training in Dokuz Eylul University supplies the students with the necessary skills and qualifications to become a 'Tonmeister' in the sense that the term is being currently used abroad. According to the Wikipedia article,

A tonmeister spans both Art and Technology: working with musicians on a musical level to help them achieve the best performances and interpretation; and utilizing or directing the use of appropriate technology to produce the most communicative experience for the listener. One may say that a Tonmeister would utilize the techniques of scientific measurement (microphones, digital recorders, accurate amplifiers etc.) but he or she is in the entertainment industry, too, using additional techniques to create experiences and illusions for performers and listeners. *Tonmeister* is a term, which is most often found as a job description in the music and recording industries. It describes a person who is a *sound master* (a literal translation of the German word, which applies to women equally as much as men): a person who creates recordings or broadcasts of music who is both deeply musically trained (in 'classical' and non-classical genres) and also who has a detailed theoretical and practical knowledge of virtually all aspects of sound recording. Both competencies have equal importance in a Tonmeister's work. [10]

The same article reports that the word 'Tonmeister' has been trademarked for the UK by the University of Surrey in 2007. The SAE Institute have been reported to register the term 'SAE Tonmeister' which has been abbreviated to 'Tonmeister' in their registrations in UK as well as several other countries, but excluding Germany, Switzerland and Austria.

When describing the full four-year UK BMus degree or its equivalent in Germany, the term is applied mostly to persons who have graduated at Bachelor level in Music and Applied Physics and who have gathered, under university supervision, at least a year of appropriate industrial experience in the music or recording business. Their musical training generally encompasses a full conventional classical training including instrumental studies, conducting, composition, historic and analytical studies and performance; together with applied physics and mathematics including calculus, the Fourier transform, complex numbers, information theory and modulation techniques, acoustics, electronics and much experience in recording techniques and music technology garnered in modern studios and on many locations. A portfolio of recordings must be offered in the final degree assessment. [10]

As understood from the information above, a tonmeister possessing a four-year degree in the field has skills and qualifications, which fulfill the description made by Dokuz Eylul University about what Music Technology program trains the students to become. However, one might argue that about whether or not a tonmeister needs to have training in areas like composition or conducting. According to the common usage in real-life, a tonmeister should master sound but not necessarily, to the extent that he has to create musical compositions with it. What attracts attention in the university's statement on the website is the unclear and general usage of some terms like '*computerized music production*', especially along with the '*etc.*', which comes immediately after it. Computerized music production might well be understood in a lot ways either covering or excluding some aspects of production.

The ongoing, and which is presumed to go on for some time more, discussion and attempts to define 'music technology' as a discipline is the key factor and main reason in taking such a generalized and approximate approach in describing what the programs offer. Such confusion hints itself in the statements of the other universities as well and it will be met again after this section.

2.1.1.2 Inonu University, Music Technology Division

Music Technology Division aims to train arranger, sound recording, acoustics and electronic dubbing, (voiceover, post synching [?]) specialists and arrangers who work in the technological dimension of music. The education in this subject consists of courses like electronics, MIDI systems and implementations, history, musical forms and styles. Although our graduates have opportunity to work as arrangers, sound recording specialists, and acoustics specialists, warranty to their employment is beyond authorization of our faculty. [11]

The statement above is from the departments' Turkish website and is translated to English. If I were a prospective student trying to grasp an idea to what this department aims to provide me with at the end of my studies here, all I could understand from this statement above would be that I might become an arranger, sound recording specialist or I might specialize in acoustics with knowledge of music history, music theory, electronics and MIDI systems and implementation. Some questions immediately arise:

- What is the identity of this department? How does the department identify its graduates?
- How can one identify this type of music technology education-what are the similarities and differences between this and other programs?
- Is the undergraduate education curriculum this school offers really so for the sake of specialization and is it applicable?
- Can a graduate from this department really be able to work as a specialist in acoustics or has also a choice to work as a sound recording specialist?
- Does the curriculum reflect so broad an area of choices that will be at the reach of graduates? Is this, then, within the limits of authorization of the faculty?

These questions originate from the inexplicitly made declarations as to what the ultimate outcome of the education will be. This has roots in the lack of attempt to reflect how music technology is counted as a discipline to establish a whole division over it. A redefinition has to be made by the department and program developers and then be reflected, though not necessarily declare the definition itself, to the statements, which are made public.

2.1.1.3 Cumhuriyet University, Music Technology Division

The main purpose of the Music Department of Cumhuriyet University is to train musicologists and music technologists who are able to produce original creations through learning national and universal music culture as stated on their website. Therefore, our students are trained as individual artists who are capable of understanding and interpreting the principles of our Republic and the modern era. The undergraduate music program aims to make the students earn an artistic perspective and analytical thinking skills in an interdisciplinary fashion and the courses include theoretical and practical activities of art and science.

The scientific studies which took place since the birth of music are covered by the Music Technology Division. This field concentrates on all the technological issues regarding music in general while specifically covering the electronic instruments and computer technology use, dubbing, recording, storage, sound synthesis, electronic composition issues as well. Physical sciences hold the first place among the fields which music technology interacts with. Accordingly, fields such as acoustics, psychoacoustics and electronic are the sciences that music technology is in a direct relationship. Prospective students who want to study in the divisions of musicology and music technology of our faculty are required to have an interest in the sciences mentioned above. In addition to this, the candidates should have had developed a keen musical direction and must have the required level of ability in hearing and auditory perception. [12]

This statement is taken from the departments' website in Turkish and translated to English. Departments' objectives are clearly stated and the contents of and in which context the courses will be taught is described in a manner that a prospective student or someone interested in researching the curriculum are also explicitly summarized. The department is mentioned to have an interdisciplinary approach to music technology, which is adequate to explain in which fashion the program is designed. In my opinion, this is a good statement, which gives the required overall information about the department and program. It also matches well with the curriculum it offers. Further explanation on to relevance and compliance of the statement and the curriculum will be discussed in the following sections of this study when the curriculum will be evaluated in individual semesters.

2.1.1.4 ITU, TMDK, Sound Recordings Division

Instrument making which has a long tradition in Turkey which has been in the form of the master apprentice relationship until the last quarter of the 20th century. Instrument making which has been included in the framework of institutional and scholarly understanding of education due to subsequent developments and sound recording which has developed as a

result of technological innovations are both involved in major production areas of today's world.

Music Technologies Department which offers an education with its academic staff who is aware of the important position of instrument making and sound recordings in these production areas aims to;

- Synchronize with the worldwide countries in the field of instrument making and sound recording areas,
- To become a leading source in the field both in national and international arenas,
- To offer acceptable improvements in instruments and sound recording technology,
- To establish standards in Turkish musical instruments,
- To train specialist graduates in instrument making and sound recording who are open-minded researchers equipped with the qualifications of a scientist and artist besides being eligible to transfer and use the knowledge and skills they earned from this department. [13]

As understood from the statement above, the department of music technologies of ITU State Conservatory of Turkish Music has two divisions, namely "Instrument Making" and "Sound Recordings." The statement of the department is a lot more like a general presentation of the department and its general objectives rather than being one that explains the specific outcomes of the two individual divisions separately. The grand objectives in education are the ones that are being presented here. However, the names of the divisions are more than being self-explanatory themselves. The name "sound recordings division" represents a specific discipline under the greater framework of music technology. This approach is one that has to be appreciated for its being explicit.

The division of sound recordings is comparable in terms of its curriculum and planning to the other programs, which forms the subject of this study. This does not apply for the division of instrument making for the reasons that its curriculum is narrowed down to a very specific field. Yet, one should not derive the conclusion that instrument making does not have a place within the music technology. Such a conclusion would highly be open to discussion. However, this kind of a discussion does not have a place within the scope of this study because this study does not aim to provide a framework for "music technology"; it only targets to offer an alternative undergraduate curriculum on the grounds of past and present experiences and based on past and current studies that are being made. According to Boehm, we are still in an era where due to its interdisciplinary nature, the integration of music technology within institutions with discipline-specific structures is still undoubtedly difficult.

Whether “music technology” is one discipline or an interdisciplinary one is not the subject of this study. Rather, the aim of this study is to build a contemporary alternative curriculum, which will enable the interaction of disciplines from different fields and even corporations at some level to create a successful and promising future for study and research in the area.

2.1.1.5 Suleyman Demirel University, Music Department

Department of Music consists of Musicology, Music Technology and Performance which are under the Music Program. The students who specialize in these sub-fields are called as by the order of Music Researchers, Tonmeisters and Soloists. Musicology Department aims to train researchers and scientists who conduct studies related to musicology and ethnomusicology by means of the principle based on study, research, analysis and writing. Music Technology Department aims to train tonmeisters who specialize in audio- video technologies, use these technology to meet today’s needs, keep up with the developments and apply them in their own fields and take responsibilities. Performance Department aims to provide the students with the opportunity to be trained in playing the instruments on which they have a special interest without the plan to be a virtuous. This department also aims to train the students to be able to sing solo or in a group and learn the methods to use this as a way of art. There are quota restrictions for each department. Students are registered to these departments based on the results of special ability exam. Musicology Department doesn’t train music teacher faculties of education. Accordingly, the alumni of this department do not have pedagogical training. So, they can’t work as music teachers in the institutions under the responsibility of the Ministry of Education. The alumni of this department can work as academicians in Music Departments of the universities, conservatories and faculties of education. It is also possible for them to work as sound engineers in TRT (Turkish national channel), public and private broadcast institutions. In addition to that, they can work as arts mentor and senior-staff in acoustic and audio-video technologies.

Each department has specific courses. Students have must courses as well as the courses specific to their departments. There are must, elective and departmental courses in three different undergraduate programs under the Department of Music. The students have the right to choose their elective courses. They can take the elective courses of the other departments with the approval of their advisors. The program which is specially developed and conducted at our university for the first time is parallel with the content and policies of the Anglo-Saxon education system. For that reason, the students who want to get their master degrees at foreign universities don’t have any adaptation problems. [14]

The statement above is taken as is and by making no corrections from the website of the school in English. The Turkish website and the one in English include nearly

similar information about the department and divisions. To avoid any confusion, which might take place, ‘music technology’ section of this department will be referred as ‘music technology division’ throughout this study.

‘Music Technology’ division is one of the three divisions of ‘Music Program’ of ‘Department of Music’ at Suleyman Demirel University. The other two divisions are the musicology and performance divisions.

Vitásková (2005) mentions ‘freedom’ and ‘autonomy’ as being two of the main academic values and norms of behavior [15]. Universities and departments are autonomous to a degree in the sense that they design, plan and implement their educational process regarding curriculum design. Suleyman Demirel University’s Department of Music used some of this autonomy to develop and conduct their program, which is specifically at their university for the first time as they declared in their website. Although they are similar to Bilgi University’s music program in the way that the students have the right to choose their elective courses that they can take with the approval of their advisors, they break this similarity up in terms of hosting departmental courses, which is something specific to each of the three divisions of the program. In this sense, they are right about saying that they have a program that is implemented only in their faculty.

This program claims to train tonmeisters who specialize in audio-video technologies, use these technology to meet today’s needs, keep up with the developments and apply them in their own fields and take responsibilities. According to the claim of the statement, “The graduates of this department are trained to work as academicians in Music Departments of the universities, conservatories, and faculties of education. It is also possible for them to work as sound engineers in TRT (Turkish national channel), public, and private broadcast institutions. In addition to that, they can work as arts mentor and senior-staff in acoustic and audio-video technologies.” These sentences seem to make a special emphasis on broadcasting as being one of the job opportunities of the alumni and further support the statement by drawing attention on video technology as a part of the course context. This is the first time we happen to meet ‘video’ as taking a place in the curriculum. Further analysis about the curriculum will be available in the following sections of this study.

2.1.1.6 Bilgi University, Music Department

Nowadays, musicians have to be competent at a variety of areas that are related to, yet different from, one another as a result of cultural and technological developments. For this reason, taking into consideration that all the processes to convey an original musical thought to the listener stand within the occupational area of the musician, the Department of Music of Bilgi University aims at enabling the students to have all the necessary skills to compose, record, produce and play music. It is expected from the prospective students that they address ‘music’ with such integrity and be interested in this ‘integrity’ itself. The department accepts music as one of the building elements of culture and aims to make the students inherit a critical perspective in their musical perception.

Program enables the students to research, identify and shape their own intellectual, emotional and creative energy by combining performance, composition, recording techniques and advanced technological applications.

The necessary technical and physical facilities like rehearsal, recording and MIDI studios are existent to equip the students with technical skills and creative qualifications. Istanbul Bilgi University Department of Music is in close contact with the music schools in Europe. With the improving opportunities within the scope of this project, there is an ongoing exchange of views about what kind of a program a music school should offer. This project also provides student exchange opportunities within ERASMUS framework.

The graduates of the department could work individually as active musicians and composers as well as work as tonmeisters, jingle artists, music producers, entrepreneurs or managers in music industry. They can work as sound designers or composers of film music in the filming industry. They can be music critics or go on with their academic studies in music. [8]

This statement explains the approach the department embraces for music and music education. As stated above, music is thought to be an important part of culture and the music education is considered to approach to music as being integral in itself. Music should be approached, as a “whole” in education and musician should be eligible and competent in all areas of music creation and delivery. This approach is reflected by the curriculum and will further be evaluated in detail during the semester analysis process.

The areas the graduates are thought to be able to work in maintain diversity among music and filming industries as well as academics. Exchange programs are given a special emphasis, providing not only exchange of students but also such interactions and co-operations like exchange of ideas and opinions on curriculum development and program improvement among institutions.

2.1.1.7 YTU, Audial Design Department

VISION :Regarding the pioneering vision of YTU in art and science, confronting higher education for music intellectuals in qualified and sustainable means.

MISSION:

- Providing skills and knowledge in scientific, aesthetic, structural, social, historic and technologic realms of music.
- Guiding students as to-be composers, musicologist, music theorists and experts in music technologies capable of synthesizing traditional and contemporary methods; abilities in research, creativity; regarding ethics, being interdisciplinary and up-to-date developments in their particular branches.
- Educating candidates of the mentioned professional disciplines through a highly qualified and continuously developing program planning regarding the pioneering vision of the university in arts and science.

AIMS:

- Professional experience throughout educational process.
- Gaining equipped with professional responsibilities.
- Getting a professional level regarding ethics and aesthetics.
- Abilities in developing strategies regarding social change.
- Convenience in value systems and identities.
- Professional productions in international recognition level.
- Capabilities in producing art and the theory behind.
- Being equipped with academic skills.[2]

The list above is taken as is from Yildiz Technical University, Faculty of Art and Design, Department of Music and Performing Arts, Audial Design Program website in English. The resemblance between Bilgi and Yildiz universities attracts attention in terms of being interdisciplinary. As there will be an opportunity to the readers to realize this interdisciplinary feature better in the oncoming sections of the study, it will also become apparent that this program differs a lot from the others in terms of comparability. This program is at this stage of the research seems like an ideal candidate to be excluded from the scope of this study. After an in-depth analysis of the program's curriculum about course content and credit, allocation will prove the incommensurability of audial design program with the other programs. However, before getting to that point, it will be appropriate to state that this program is unique in Turkey with a huge emphasis on the relationships between music and other disciplines. This is not to say that the other programs mentioned above do not touch these relationships at all. They all do in their own ways but this program makes use of these relationships in its curriculum for achieving its objective of providing skills

and knowledge in scientific, aesthetic, structural, social, historic, and technologic realms of music.

The working areas of the graduate from this program are counted as being creative composers, musicologist, music theorists, and experts in music technologies with the qualifications and skills about being researchers synthesizing traditional and contemporary methods while appreciating ethics and up-to-date developments in their particular branches. The graduates are also expected to become professionals who produce theory as well as art. The program aims to provide the students with professional experience throughout educational process and this aim's being convenient with the curriculum is well observed in the curriculum analysis while evaluating the course contents.

2.1.2 Data analysis and comparison by credit allocation

The data consists of

- the curriculums of the mentioned programs of each individual school including information regarding the names of the courses,
- credits (as being theoretical, practical, total and European Transfer Credits[ECTS] where available) of the courses,
- types (whether compulsory or elective) of the courses,
- in which semester each individual course is taught and
- The course contents.

Most of the data is obtained through internet search and through electronic mailing at times that it is unavailable online (e.g. course content of Inonu University, Music Technology Department is obtained from the department via e-mail). The course plans and curriculums that are examined and explored can be listed as follows:

- Dokuz Eylul University, Faculty of Fine Arts, Department of Musicology (or Musical Sciences), Music Technology curriculum [9],
- Inonu University, Faculty of Fine Arts and Design, Department of Music, Music Technology curriculum [11],
- Cumhuriyet University, Faculty of Fine Arts, Music Technology curriculum [12],

- Istanbul Technical University, State Conservatory of Turkish Music, Department of Music Technology, Sound Recordings curriculum [13],
- Suleyman Demirel University, Faculty of Fine Arts, Department of Music, Music Technology curriculum [14],
- Bilgi University, Department of Music, Music curriculum [8],
- Yildiz Technical University, Faculty of Art and Design, Department of Music and Performing Arts, Audial Design curriculum [2].

At this time of the study, data is evaluated through analyzing the collected data through grouping them according to departments, course contents, course categories, and semesters. The data grouping had the objectives of

- comparing the curriculum in terms of credit allocation first at a semesterly basis, and then through the four-year education of each department;
- establishing an understanding of what categories of courses are taught and at what percentages at each department;
- finding out similarities and differences among the departments;
- revealing to what extent the curriculum and course contents of each department fulfills its statements it made to prospective students by publishing on its website;
- finding out the possible problems in curriculum design, planning and application which is expected to shape the questions for planned survey which will take place in oncoming stages of the study.

Data grouping does aim neither to make any classification while deciding the course categories, nor to establish taxonomy among the disciplines. What is meant by ‘course category’ is the pertaining of the course to a subject or field (e.g. ‘Piano I’ as a course belong to ‘Performance’ category). The course categories are selected according to course content, the instructor’s point of view about the course being in what field, the overall context of the department’s curriculum or common traditional definition as to what category of a course it is. These determiners act in interaction with each other and sometimes one has to decide about what category a course falls in by taking into consideration all the determiners. Yet at other times, it becomes possible to decide by taking only two of the determiners into account. To put it in other words, the categories are decided according to content, implementation and function and selection among these determiners are made at times taking them into

consideration to reach the ultimate goal of finding out how much of these course reflect the program in terms of their relevance to music technology.

It is inevitable that trying to fit the courses designed to reflect a multi-disciplinary or interdisciplinary approach in categories causes problems to occur. However, there is no other way to understand how much of the courses being taught at the present relate, reflect, regard or belong to music technology without making a categorization among them. Indeed, it is completely open to discussion that a specific course would really take place in the one category that research revealed it to be and it should never be failed to notice that making a categorization is not intended to reach a strict taxonomy or disintegration of a program but it is intended to sort out what kind of an educational approach a school is going for. At the end of it all, the aim of this study is to offer an alternative curriculum to the existent programs sometimes by adopting the best they have, on the other hand at others excluding some elements for the sake of applicability, function, accordance with program statements or approach.

One of the problems faced in the process of categorization is confronting some courses that fall under none of the categories determined mostly because of the nature of the course being multi-modular. At those times, it is decided to put these courses under a category as ‘others’ to avoid any possible confusion which might occur. For example, Yildiz Technical University’s Audial Design program offers Basic Music Design I and II courses during the first two semesters which at each week of the syllabus a lecture is held which falls into one of the categories. At this situation, it is not applicable to categorize this course as falling into just one category. It is also not call the course ‘interdisciplinary’ and consider ‘interdisciplinary’ as being one of the categories because this would mean that the other courses do not have any interdisciplinary feature. To put it briefly, it becomes convenient to categorize this course in ‘others’ category, because of its incomparable nature.

On the other hand, there are courses belonging to different programs, having the same name but by description of their instructors and in the way that they are being taught, they can be evaluated as being under different categories. The organology course taught in ITU music technology department and organology taught in Inonu University’s music technology department differ from each other in the way that they are being taught, hence, in course design and contents. In ITU, the course is

designated as for being taught both in an ethnomusicological and historical musicological manner. Dissimilarly, organology in Inonu is designated to serve the music technology. When such disputes are faced, like in the case of the organology course, the individual courses are evaluated according to their function and designation.

In the programs like those of Bilgi and Suleyman Demirel universities' where a variety of electives are available to the students to choose from to structure their path according to their educational needs, it is considered that the students would have gone for selecting the maximum number of music technology courses while not exceeding the term credits. The reason for such a consideration is to be able to find out at what maximum rate a student could benefit from the program in terms of the opportunity to take music technology courses. Such an approach not also enables the researcher to eliminate one of the variables, which would affect comparison graphics and would cause inefficiency in time management of the project, but also contributes to the detection of the maximum number of courses in music technology the department could offer while not exceeding the total number of credits per term.

Consequently, the main eleven categories detected that the courses are covered in by the seven undergraduate programs are Performance, Music Technology, Music Theory, Composition, Music History and Literature, Music Business, Musicology/Ethnomusicology, IT (Information Technology), YÖK, Language and Other.

There is no hierarchical relationship among the categories. These categories are detected as a result of scanning all the course contents, curriculums and syllabi of the individual courses (where available) of all the departments. The category "Musicology/ Ethnomusicology" is there among the others just for two courses, namely "Design Major Branch" and "Design Major Branch Seminar" which are being taught in Audial Design program of Yildiz Technical University. "Musicology" is considered to be on top of all the music related courses in this study. Although "Musicology/ Ethnomusicology" is not intended as to be represented as a separate category at the beginning of the study for the reason that the terms represent a higher notion of containing all of the other categories related to music as if a superset covers subsets. Additional to that, because of the reason that musicology

and ethnomusicology are two separate disciplines, it is then decided to leave the instructor categorization as it is.

For the reason that each program offers a total number of credits unique to itself, the weighting is decided to be calculated in terms of percentages to equalize the total numbers in percentages. The weight of the credits per category per semester is calculated and converted to percentages by using the equation **(2.1)**.

$$\text{Total Credit Load per Category (\%)} = (100 / \text{Total Term Credits}) * \text{Number of Credits per Category} \quad (2.1)$$

2.1.3 Credit allocations by Turkish music technology curriculums

2.1.3.1 Term I

In the first term of the four-year undergraduate education, the total numbers of credits the programs have are shown in Table 2.2. The first semester courses, which fall under the eleven categories, are represented for each program in this section.

Table 2.2 : Total number of credits for undergraduate Music Technology programs in Turkey, Term I.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Suleyman Demirel	Music/ Music Technology	28	1
Dokuz Eylul	Music Technology	25,5	2
Istanbul Technical	Sound Recordings	19,5	3
Inonu	Music Technology	19	4
Bilgi	Music	18	5
Cumhuriyet	Music Technology	17	6
Yildiz Technical	Audial Design	10	7

DEU, music technology curriculum

Having 25.5 credits as shown with Table A.1, DEU Music Technology Division's curriculum has a second place after Suleyman Demirel University in the number of total credits for first semester ranking.

Apart from these courses whose contents are made available by the department, Basic Information Technology (IT), Atatürk Principles (1 Year), Turkish I and Language (German /French/ English) are courses in the first semester of the program. DEU music technology department allocates the yearly YÖK course, "Atatürk Principles," to be finished in first semester. This is one of the reasons that its total number of credits goes higher in the ranking as well as being a reason of the high share of YÖK courses (23.5%) within this particular program. Some of the programs, as will soon be seen, do not allocate any YÖK classes in the first semester.

Most of the share is allocated to music theory courses with a percentage of 27.5%. Then follows music technology and YÖK courses, each having a share of approximately 23.5%. They are followed by information technology course, which has been spared an amount of 11.8%. The following rank belongs to foreign language course with 7.8%. It is followed by the last in the list, which is performance with a share of 5.9%. The overall shares of the first term of this particular program are represented by a pie chart in Figure 2.1.

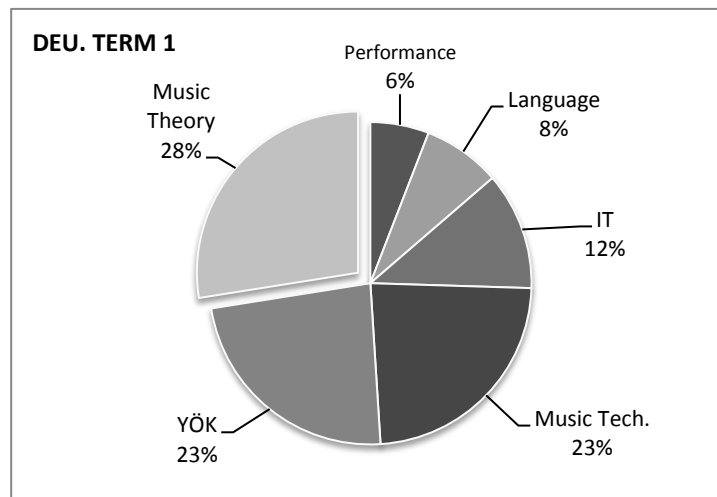


Figure 2.1 : The share of each category in percentages for DEU Music Technology Division, Term I.

Inonu University, music technology curriculum

Having a total of 19 credits Inonu- Music Technology Division's curriculum has the fourth place in the number of total credits for first semester ranking (see Table A.2).

The most of the share this term belongs to music theory and YÖK classes with each of them having approximately about 21.1% of the total credits. Then follows performance, language, and information technology classes each having shares nearly about 15.8% of the overall credits of the term. The overall shares of the first semester of this particular program are represented by a pie chart (see Figure 2.2).

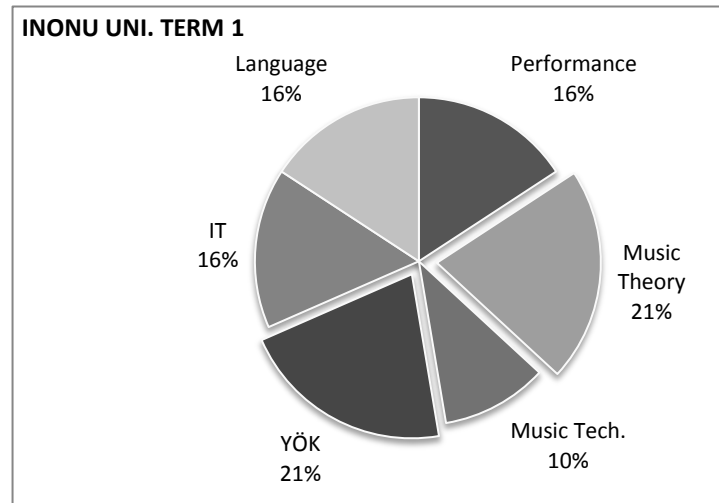


Figure 2.2 : The share of each category in percentages for Inonu Uni. Music Technology Division, Term I.

The percentage share of music technology courses in the first term of the curriculum of this particular program is approximately 10.5%, which has the second place when sorted from least to most. Yildiz Technical University's Audial Design program is the last program in that ranking with having no music technology related courses at all.

Cumhuriyet University, music technology curriculum

Cumhuriyet University's first semester of the music technology program is distinctive among others in a number ways. Firstly, as can be seen in the following table, this program hosts two courses of information technology. Although one of them, called "Basic IT usage" has just the same contents with the other programs' basic IT courses, it has been assigned 0 (zero) credit this term. In the other programs we have examined, 3 credits were assigned to this course. The other IT course is called "Programming Languages I" which teaches software development and which

is considered ‘a must’ to offer in a music technology curriculum. The curriculum for the first semester of study in this specific program is represented by Table A.3 in the appendices section.

Secondly, the program has “Introduction to Turkish Music” course where history and theory of Turkish music is being taught. There is no distinct course for basic music theory in the first semester and this is an unconventional situation. Indeed, as understood when read from the course contents, this function is realized by “Musical Hearing, Reading and Dictation I” course which has been allocated 5 credits as being more than it has in the other programs. The overall shares of the first semester of this particular program are represented by a pie chart (see Figure 2.3).

The most of the share this term belongs to music theory having approximately about 41.2% of the total credits. Then follow music technology courses having a share nearly about 23.5% of the overall credits of the term. The rest of the courses belonging to categories of performance, music history & literature and IT each have 11.8 % of the overall credits of the term.

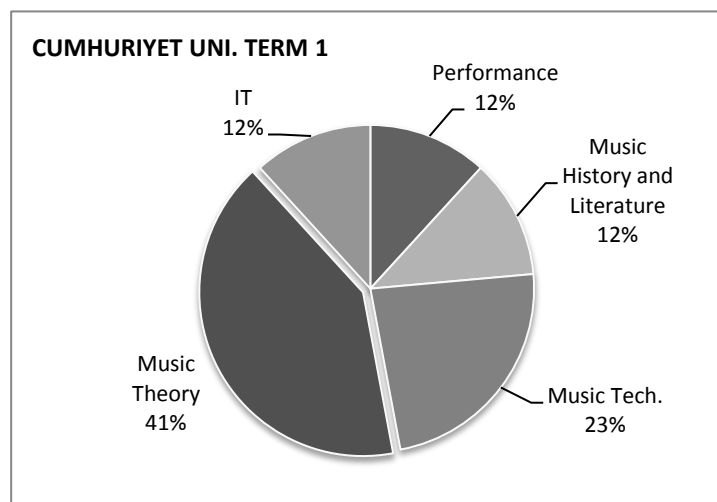


Figure 2.3 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Term I.

ITU, TMDK, sound recordings curriculum

Istanbul Technical University, Sound Recordings Division has the third place in terms of total number of credits offered in the first semester of the four-year undergraduate curriculum with a total number of credits of 19.5.

As shown in Table A.4, this particular program is the second program met during the study to have “the theory and solfeggio of Turkish music”, however with a credit allocation of 4 credits in the first semester. In addition to this, distinctively, the program has an intense general music theory course, which also has been allocated 4 credits. The overall shares of the first semester of this particular program are represented by a pie chart in Figure 2.4.

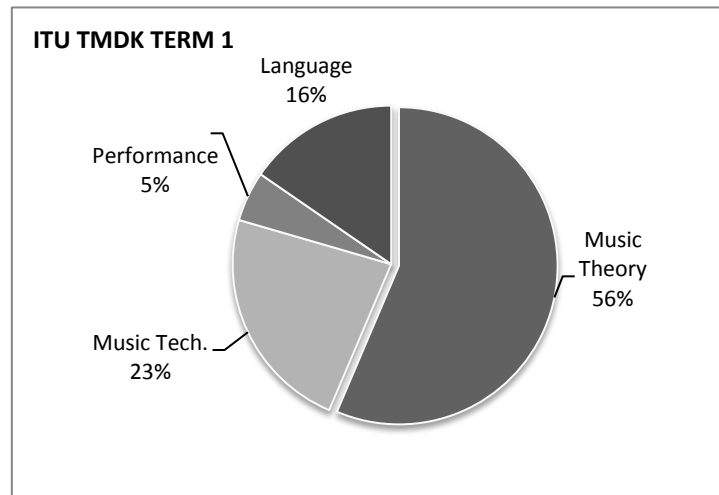


Figure 2.4 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Term I.

The program is the first in ranking about the theory courses’ overall credit allocation with a percentage of 56.4%. This is the highest rate of credits allocated to music theory courses. The second place within the division’s credits available for the first semester is the music technology category with a percentage rate of 23.1%. What comes next is the foreign language with 15.4% followed by the performance courses with a percentage of 5.1%.

Suleyman Demirel University, music technology curriculum

Suleyman Demirel University, Faculty of Fine Arts, Department of Music, Music Program, Music Technology Division has the first place in terms of total number of credits offered in the first semester of the four-year undergraduate curriculum with a total number of credits of 28. The overall shares of the first semester of this particular program are represented by a pie chart in Figure 2.5.

The most of the share this term belongs to music technology having approximately about 28.6% of the total credits. Then follow music history & literature, YOK, foreign language, and the courses listed under “other” category each shares nearly

about 14.3% of the overall credits of the term. The rest of the courses belong to categories of music theory and performance, and they have been assigned amounts of 10.7 % and 3.6% of the overall credits of the term respectively.

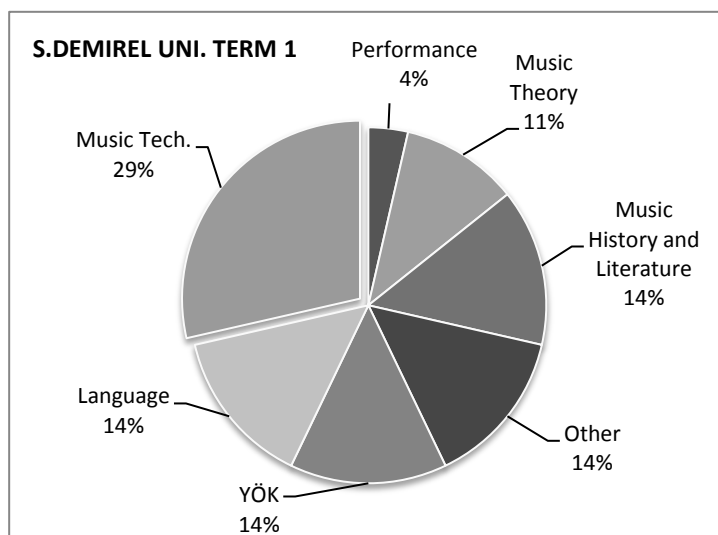


Figure 2.5 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Term I.

The part of the curriculum of the first semester of the education in this particular program is shown in Table A.5. As also shown in the table, this program is unique with its feature where a variety of electives is available to the students to choose from to structure their path according to their educational needs. The program requires 8 credits from the electives' list. It is considered that the students would have gone for selecting the maximum number of music technology courses while not exceeding the term credits. The reason for such a consideration is to be able to find out at what maximum rate a student could benefit from the program in terms of the opportunity to take music technology courses. Therefore, the available 8 credits in music technology electives are selected by the author to see how realizable the division's statement is.

Bilgi University, music curriculum

Bilgi University, Department of Music has designed the first year of the studies in music program as being a preparatory and introductory year. The students are prepared to their oncoming musical experience on the educational level by means of the courses of the first two terms. The first term curriculum can be seen in Table A.6. The overall shares of the first semester of this particular program are represented by a pie chart in Figure 2.6.

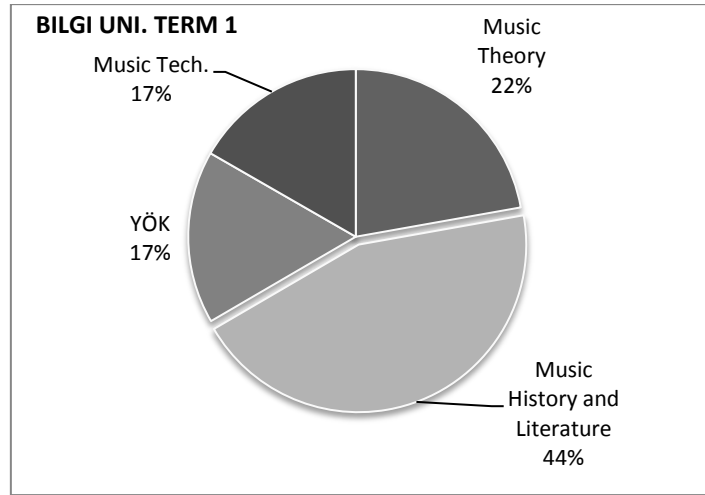


Figure 2.6 : The share of each category in percentages for Bilgi University, Music Department, Term I.

The share of music history and literature category is in the first rank within the semester's curriculum with a percentage of approximately 44.4%. The second rank has a share of 22.2% and belongs to music theory category. For the reason of enabling the student to design their own education by the means of electives, considering an education to a more technological pathway, "MIDI and Sound Technology" course is selected by the author that makes the music technology category have a share of approximately 16.7%. YÖK course, Turkish shares the same percentage amount with music technology category as 16.7%.

YTU, audial design curriculum

This program is distinct in character that Design Major Branch courses are identified and categorized as "musicology/ ethnomusicology" by the instructor throughout all the terms that they are being taught.

The first term courses along with their individual share in the curriculum can be seen in Table A.7. Basic Music Design courses are taught in an intensively multi-modular fashion. Throughout the syllabus of this course, one week might be taken into consideration as falling into the category of history and literature and the other week might be under music theory or technology. This course, being intensively multi-modular, is considered to be under the category of "other" within this study. The overall shares of the first semester of this particular program are represented by a pie chart in Figure 2.7.

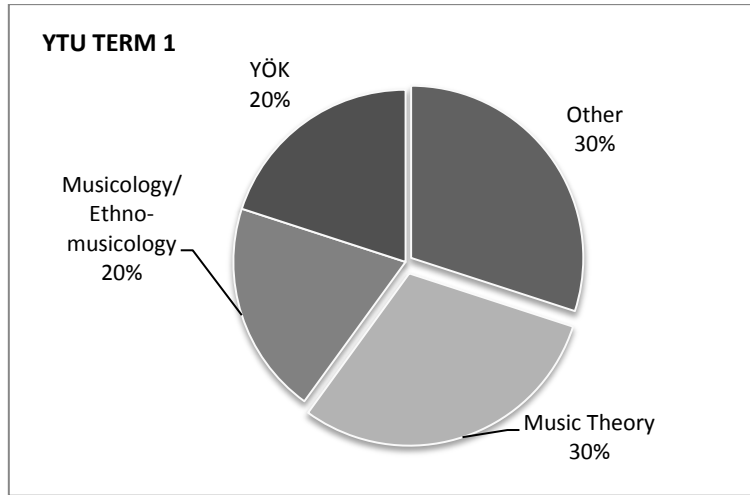


Figure 2.7 : The share of each category in percentages for YTU, Audial Design Department, Term I.

As can be seen in the chart above, courses classified as “other” and the ones as “music theory” each has the most shares as 30%, while ‘musicology/ethnomusicology’ and YOK courses each have 20% of the total credits of the semester.

2.1.3.2 Term II

In the second term of the four-year undergraduate education, the total numbers of credits the programs have are shown in Table 2.3. The second semester courses, which fall under the eleven categories, are introduced for each program in the following sections.

Table 2.3 : Total number of credits for undergraduate Music Technology programs in Turkey, Term II.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Dokuz Eylul	Music Technology	22,5	2
Inonu	Music Technology	19	5
Cumhuriyet	Music Technology	20	3
Istanbul Technical	Sound Recordings	19,5	4
Suleyman Demirel	Music / Music Technology	31	1
Bilgi	Music	18	6
Yildiz Technical	Audial Design	12	7

DEU, music technology curriculum

Having a total of 22.5 credits, DEU music technology curriculum has a second place after Suleyman Demirel University in the number of total credits for second semester ranking. The overall distribution of the credits per courses can be seen in the chart represented in Figure 2.8.

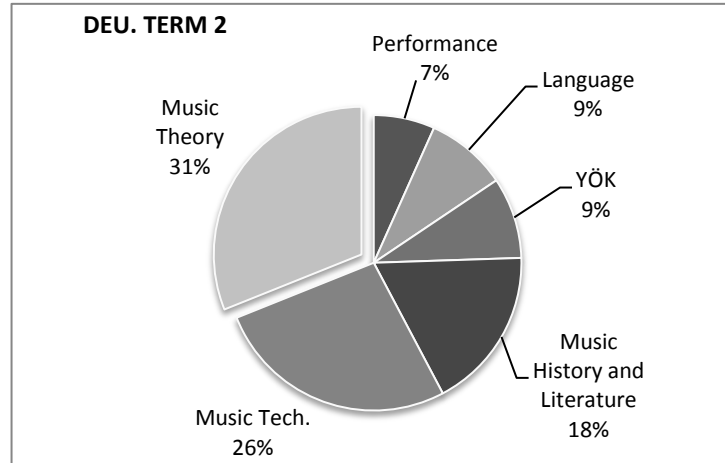


Figure 2.8 : The share of each category in percentages for DEU Music Technology Division, Term II.

The courses the program offers for the second term and their credit loads are listed, categorized, and shown in the Table B.1. Most of the share is allocated to music theory courses with a percentage of 31.1%. Then follows music technology courses having an approximate share of 26.7%. They are followed by a music history & literature course 17.8%. The following rank belongs to foreign language course and YOK courses each having 8.9% and is followed by the last in the list which is performance with a share of 6.7%.

Inonu University, music technology curriculum

Having a total of 19 credits Inonu University, Music Technology Division's curriculum has the fifth place in the number of total credits for second semester ranking. The most of the share this term belongs to music theory and YOK classes each of them having approximately about 21.1% of the total credits. Then performance, language and information technology classes follow, each having shares nearly about 15.8% of the overall credits of the term. The courses the program offers for the second term and their credit loads are listed, categorized, and shown in the Table B.2. The overall individual shares of the courses offered in the second semester of this particular program is represented by a pie chart below in Figure 2.9.

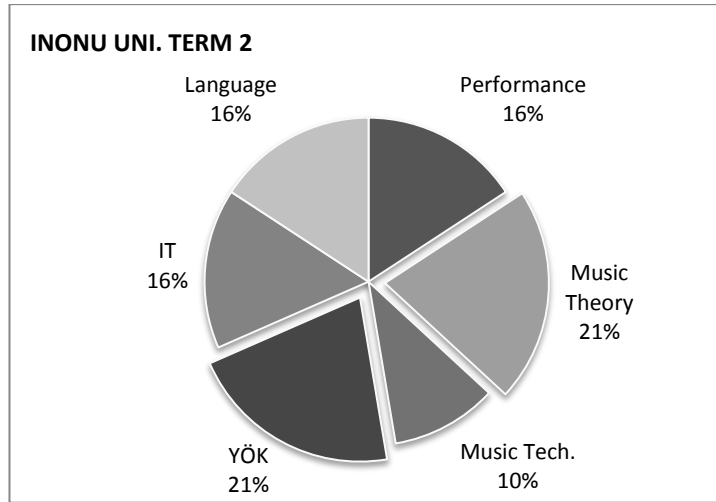


Figure 2.9 : The share of each category in percentages for Inonu Uni. Music Technology Division, Term II.

The percentage share of music technology courses in the second term of the curriculum of this particular program is approximately 10.5%, which has the second place when sorted from least to most.

Cumhuriyet University, music technology curriculum

Having a total of 20 credits Cumhuriyet University's Music Technology Division's curriculum has a third place in the number of total credits for second semester rankings. The courses the program offers for the second term and their credit loads are listed, categorized, and shown in Table B.3.

As can be seen in Table B.3, Cumhuriyet University's second semester of the music technology program is distinctive among others in the same ways that it was in the first semester in terms of the information technology and introduction to Turkish music courses.

The most of the share this term again belongs to music theory having about 35% of the total credits like in the first semester. Then follow information technology courses having a share nearly about 25% of the overall credits of the term. Music technology courses share is 20% of the overall credits of the term. The rest of the courses belong to categories of music history & literature and performance, each having 10% of the overall credits of the term. The overall shares of the second semester of this particular program are represented in Figure 2.10.

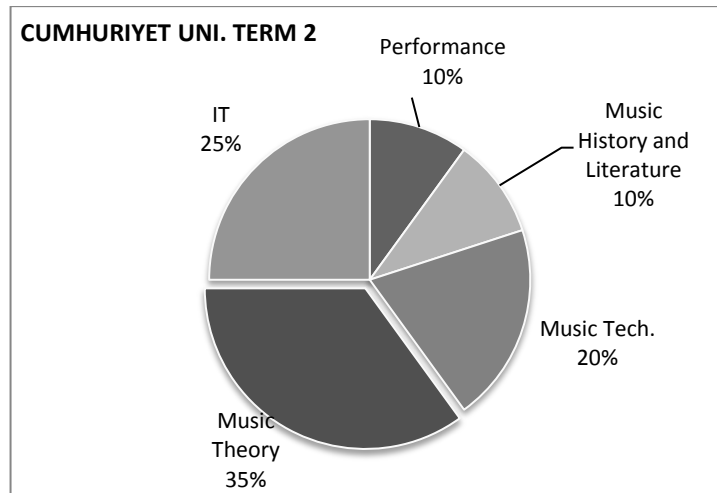


Figure 2.10 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Term II.

ITU, TMDK, sound recordings curriculum

Istanbul Technical University, State Conservatory of Turkish Music, Department of Music Technologies, Sound Recordings Division has the fourth place in terms of total number of credits offered in the second semester of the four-year undergraduate curriculum with a total number of credits of 19.5 just as in the first semester. The courses the program offers for the second term and their credit loads are listed, categorized, and shown in Table B.4. The overall shares of the second semester of this particular program are represented with a pie chart in Figure 2.11.

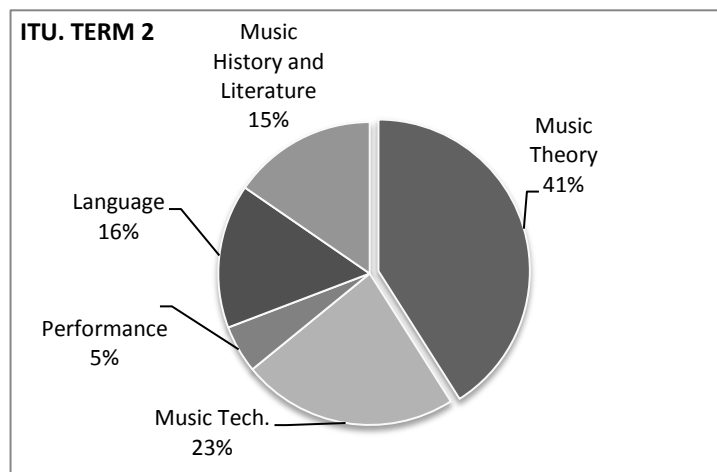


Figure 2.11 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Term II.

The program is the first in ranking in terms of the theory courses' overall credit allocation with a percentage of 41%. This is the highest rate of credits allocated to music theory courses in the second semester. The second place within the division's

credits available for the second semester is the music technology category with a percentage rate of 23.1%. What comes next is the foreign language and music history & literature courses each having a percentage of 15.4% followed by the performance courses' percentage of 5.1%.

Suleyman Demirel University, music technology curriculum

Suleyman Demirel University, Faculty of Fine Arts, Department of Music, Musicology Arts Program, Music Technology Division has the first place in terms of total number of credits offered in the second semester of the four-year undergraduate curriculum with a total number of credits of 31.

The courses the program offers for the second term and their credit loads are listed, categorized, and shown in Table B.5. The overall shares of the second semester of this particular program are represented with a pie chart in Figure 2.12.

The program requires 8 credits from the electives' list. It is considered that the students would have gone for selecting the maximum number of music technology courses while not exceeding the term credits here when making the calculations. Therefore, the available 8 credits in music technology electives are selected by the author to see how realizable the division's statement is.

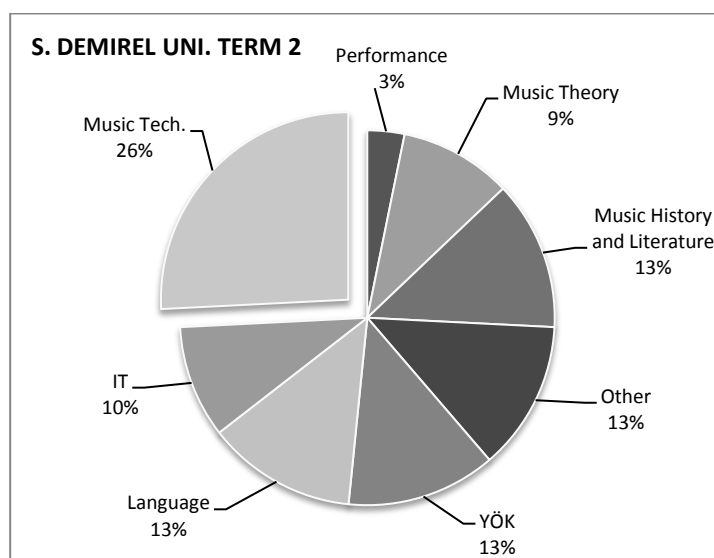


Figure 2.12 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Term II.

The most of the share this term belongs again to music technology (as in the first term) having approximately about 25.8% of the total credits. Then follow music history & literature, YÖK, foreign language, and the courses listed under “other”

category each shares nearly about 12.9% of the overall credits of the term. The rest of the courses belong to the categories of music theory, information technology, and performance. These course categories approximately have 9.7%, 9.7%, and 3.2% of the overall credits of the term respectively.

Bilgi University, music curriculum

Second semester in Bilgi University is the continuation of the first semester with the second parts of the exactly the same courses from the first semester. This is a result of the planning of the curriculum for the first year as to have a preparatory nature. The curriculum for the second semester of study in this specific program is represented by Table B.6 in the appendices section. Neither the credit allocation nor total number of credits offered differs from the first semester as can be seen by making a comparison between Table A.6 and Table B.6. The overall shares of the second semester of this particular program is represented in percentages and by a pie chart in Figure 2.13.

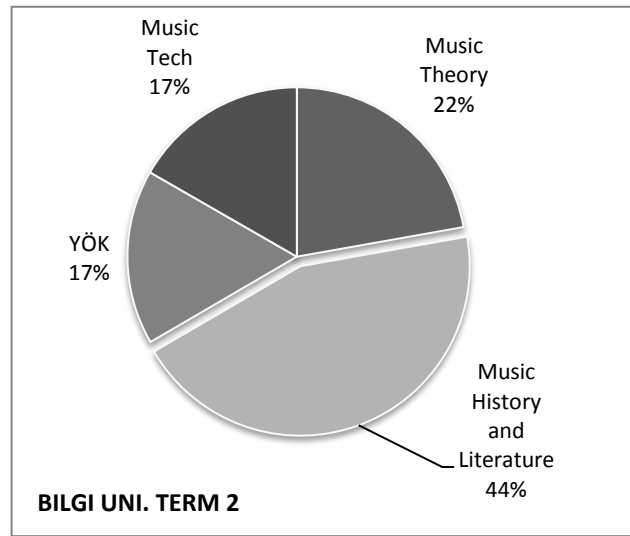


Figure 2.13 : The share of each category in percentages for Bilgi University, Music Department, Term II.

The share of music history and literature category is in the first rank within the semester’s curriculum with a percentage of approximately 44.4%. The second rank has a share of 22.2% and belongs to music theory category. The music technology category has a share of approximately 16.7%. YOK course, “Turkish” shares the same percentage amount with music technology category as 16.7%.

YTU, audial design curriculum

Table B.7 in the appendices section represents the curriculum for the second semester of study in this specific program.

In the overall curriculum of the second term, of the ‘other’ and ‘music theory’ categories, each has the most shares as 25%, while ‘musicology / ethnomusicology’ and ‘YÖK’ courses each have approximately 16.7% of the total credits of the semester.

‘Performance’ course also has the same credits with ‘YÖK’ courses as approximately 16.7% and it is the new course added to the curriculum for this semester. The overall shares of the second semester of this particular program are represented by a pie chart in Figure 2.14.

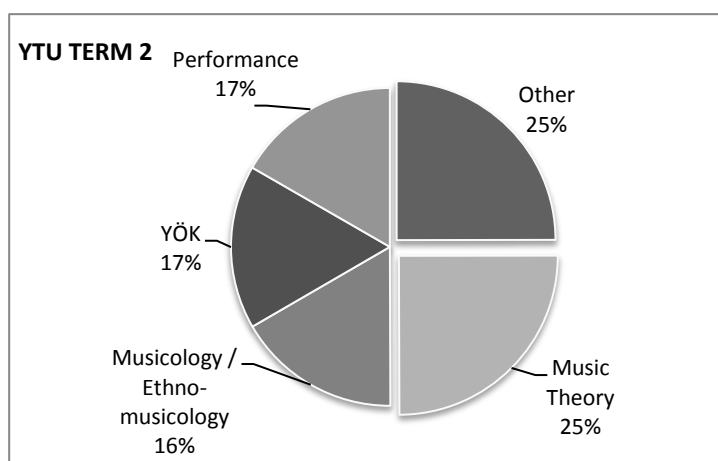


Figure 2.14 : The share of each category in percentages for YTU, Audial Design Department, Term II.

2.1.3.3 Term III

In the third semester of the four-year undergraduate education, the total numbers of credits the programs have are shown in table below. With the programs entering their third semester of the four-year curriculum, a raise in the total number of courses is observed in some of the programs. This is due to the fact that the undergraduate curricula, in general, are designed to have somewhat a preparatory and ‘orientation’ manner. Now that the students are expected to have the required academic and social background in the university, the third term starts to develop their in-depth knowledge about the field of study they chose. In the third semester of the four-year undergraduate education, the total numbers of credits the programs have are shown in Table 2.4.

Table 2.4 : Total number of credits for undergraduate Music Technology programs in Turkey, Term III.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Dokuz Eylul	Music Technology	30,5	1
Inonu	Music Technology	16	6
Cumhuriyet	Music Technology	27	2
Istanbul Technical	Sound Recordings	18,5	4
Suleyman Demirel	Music / Music Technology	22	3
Bilgi	Music	18	5
Yildiz Technical	Audial Design	12	7

These third semester courses, which fall under the eleven categories, are represented for each program in the following sections.

DEU, music technology curriculum

Having a total of 30.5 credits DEU Music Technology Division's curriculum has the first place in the ranking in terms of the number of total credits the programs offer for the third semester. The number of the courses offered rises in this semester. The overall shares of the third semester of this particular program are represented by a pie chart in Figure 2.15.

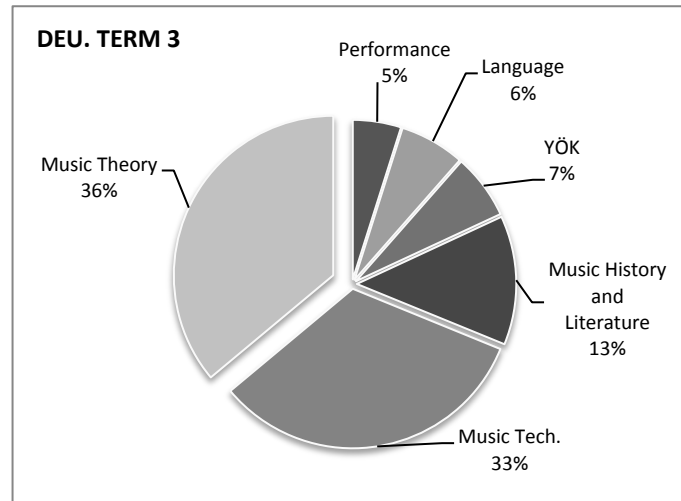


Figure 2.15 : The share of each category in percentages for DEU Music Technology Division, Term III.

The individual share for categories shift with the additional courses offered for this term. The credit shares of the courses offered in the third term of the undergraduate study in DEU Music Technology program are shown in Table C.1.

Most of the share is allocated to music theory courses with a percentage of 36.1%. The music technology category has an approximate total share of 32.8%. It is followed by music history & literature course, which has a share of 13.1% this term. Foreign language course and YOK courses each has been allocated an amount of 6.6% among term's total credit load. They are followed by the last in the list, which is performance category with a share of 4.9%.

Inonu University, music technology curriculum

Having a total of 16 credits Inonu Uni. Music Technology Division's curriculum has the sixth place in the number of total credits for third semester ranking. The courses the program offers for the third term and their credit loads are listed, categorized, and shown in Table C.2. The overall shares of the categories of the third semester of this particular program are represented by a pie chart in Figure 2.16.

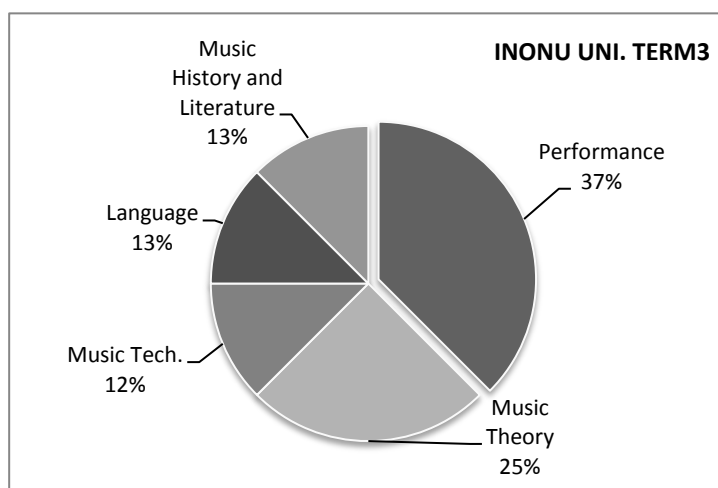


Figure 2.16 : The share of each category in percentages for Inonu Uni. Music Technology Division, Term III.

The most of the share this term belongs to 'performance' category having approximately about 37.5% of the total credits. Then 'music theory' classes follow, having a share of 25% of the overall credits of the term. The percentage share of 'music technology' courses in the third term of the curriculum of this particular program are 12.5% which is also the percentage share for 'foreign language' and 'music history & literature' courses.

Cumhuriyet University, music technology curriculum

Having a total of 27 credits Cumhuriyet University's Music Technology Division's curriculum has the second place in the number of total credits for third semester rankings. The credit shares of the courses offered in the third term of the

undergraduate study in Cumhuriyet University Music Technology program are shown in Table C.3.

The most of the share this term again belongs to music theory having about 33.3% of the total credits close to the first two semesters. Then follow music technology courses having a share nearly about 29.6% of the overall credits of the term. As shown in the overall shares of the third semester of this particular program is represented by Figure 2.17, the rest of the courses belong to categories of music history & literature, information technology and YÖK courses, each having approximately 7.4 % of the overall credits of the term.

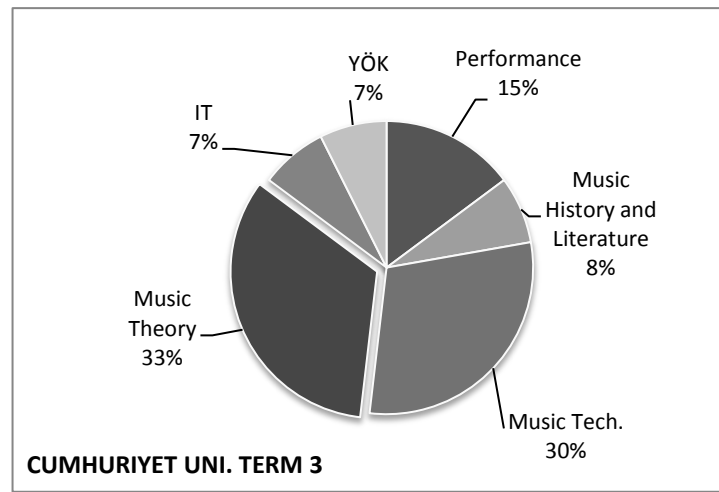


Figure 2.17 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Term III.

ITU, TMDK, sound recordings curriculum

Istanbul Technical University, State Conservatory of Turkish Music, Department of Music Technologies, Sound Recordings Division has the fourth place in terms of total number of credits offered in the third semester of the four-year undergraduate curriculum with a total number of credits of 18.5. The credit allocation for the ITU Sound Recordings division, in number of credits and percentages per category belonging to third semester of the four-year curriculum can be seen in Table C.4. %. The overall shares of the third semester of this particular program are represented by a pie chart in Figure 2.18.

The program is the first in ranking about the theory courses' overall credit allocation with a percentage of 43.2%. The second place within the division's credits available for the third semester is the music technology category with a percentage rate of

35.1%. What comes next is the foreign language course having an approximate percentage of 16.2% followed by the performance courses' percentage of 5.4

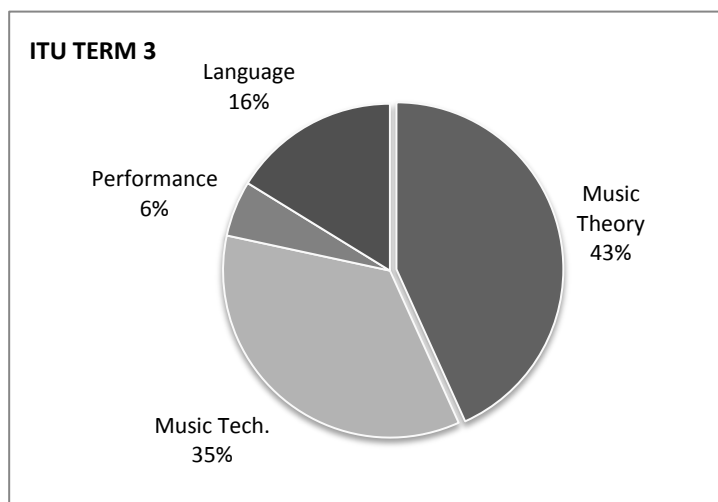


Figure 2.18 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Term III.

Suleyman Demirel University, music technology curriculum

Suleyman Demirel University, Faculty of Fine Arts, Department of Music, Musicology Arts Program, Music Technology Division has the third place in terms of total number of credits offered in the third semester of the four-year undergraduate curriculum with a total number of credits of 22. The overall shares of the third semester of this particular program are represented by a pie chart in Figure 2.19.

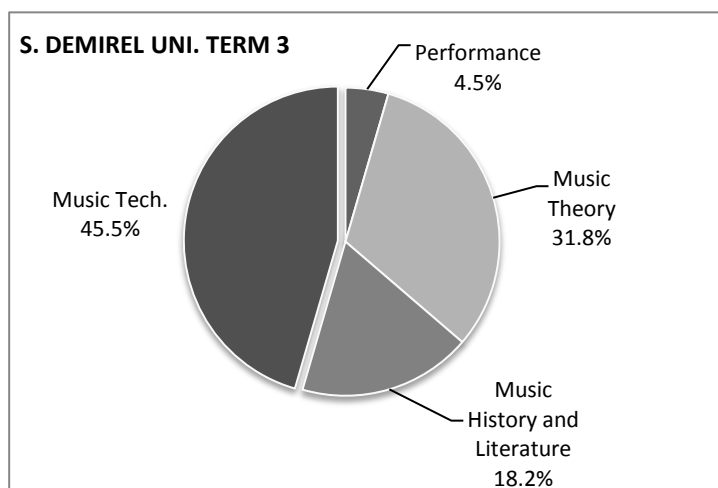


Figure 2.19 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Term III.

The program requires 8 credits from the electives' list. It is considered that the students would have gone for selecting the maximum number of music technology

courses while not exceeding the term credits. Therefore, the available 8 credits in music technology electives are selected by the author. The most of the share this term belongs again to music technology (as in the first two terms) having approximately about 45.5% of the total credits. Then follow music theory with a share nearly about 31.8% of the overall credits of the term.

The rest of the courses belonging to the categories of music history & literature and performance approximately have 18.2% and 4.5% of the overall credits of the term respectively. The part of the curriculum's belonging to the third semester of the education in this particular program is shown in Table C.5.

Bilgi University, music curriculum

Bilgi University, Department of Music, Music Program, has the fifth place in terms of total number of credits offered in the third semester of the four-year undergraduate curriculum with a total number of credits of 18.

The overall shares of the third semester of this particular program are represented in percentages and by a pie chart in Figure 2.20. As shown in Table C.6, the share of music technology category is in the first rank within the semester's curriculum with a percentage of approximately 33.3%. The second rank has a share of 22.2% and belongs to music theory category. The music history & literature and "other" categories have the same amount of credit share of approximately 16.7%. YÖK course, 'Turkish' has a percentage amount of approximately 11.1%.

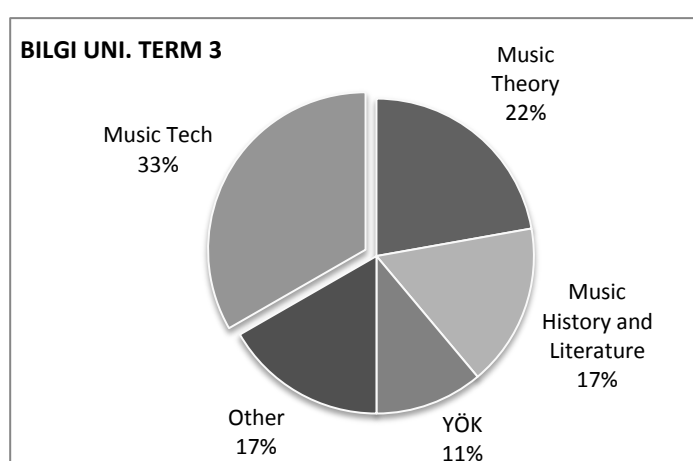


Figure 2.20 : The share of each category in percentages for Bilgi University, Music Department, Term III.

Third semester in Bilgi University can be considered as the first of the semesters which is not preparatory and which starts after a year of preparation for music

studies. This is a result of the planning of the curriculum for the first year as to have an introductory nature.

YTU, audial design curriculum

Yildiz Technical University, Department of Music and Performing Arts, Audial Design Program has the seventh and last place in terms of total number of credits offered in the third semester of the four-year undergraduate curriculum with a total number of credits of 12 which can be observed in Table C.7. The overall shares of the third semester of this particular program are represented by a pie chart in Figure 2.21.

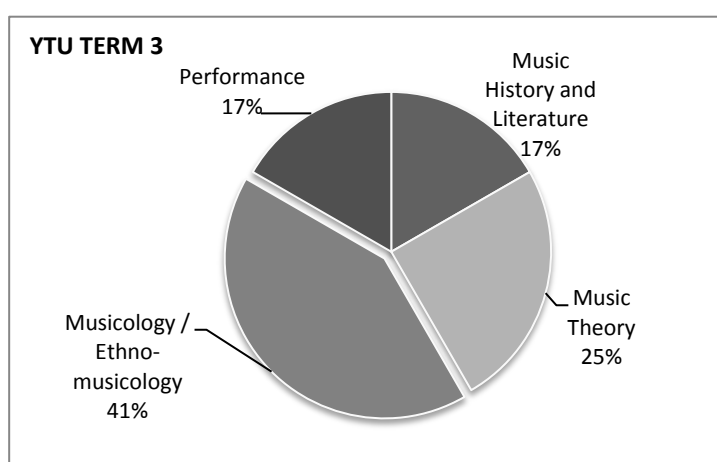


Figure 2.21 : The share of each category in percentages for YTU, Audial Design Department, Term III.

In the overall curriculum of the third term, ‘musicology /ethnomusicology’ category has most of the shares as approximately 41.7%, while music theory has approximately 25% of the total credits of the semester. Performance and music history & literature courses have the same amount of credits with each other being approximately 16.7% among the total number of credits the program offers.

2.1.3.4 Term IV

In the fourth semester of the four-year undergraduate education, the total numbers of credits the programs have are shown in Table 2.5. The fourth term courses, which fall under the eleven categories, are represented for each program in the following section.

Table 2.5 : Total number of credits for undergraduate Music Technology programs in Turkey, Term IV.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Dokuz Eylül	Music Technology	24,5	2
Inonu	Music Technology	16	5
Cumhuriyet	Music Technology	27	1
Istanbul Technical	Sound Recordings	19,5	3
Suleyman Demirel	Music / Music Technology	18	4
Bilgi	Music	18	4
Yildiz Technical	Audial Design	15	6

DEU, music technology curriculum

Having a total of 24.5 credits DEU Music Technology Division's curriculum has the second place in the ranking in terms of the number of total credits the programs offer for the fourth semester. The number of the courses offered by this program falls by number this semester relative to the previous one as can be observed as a result of a comparison between Table C.1 and Table D.1. The overall shares of the fourth semester of this particular program are represented by a pie chart in Figure 2.22.

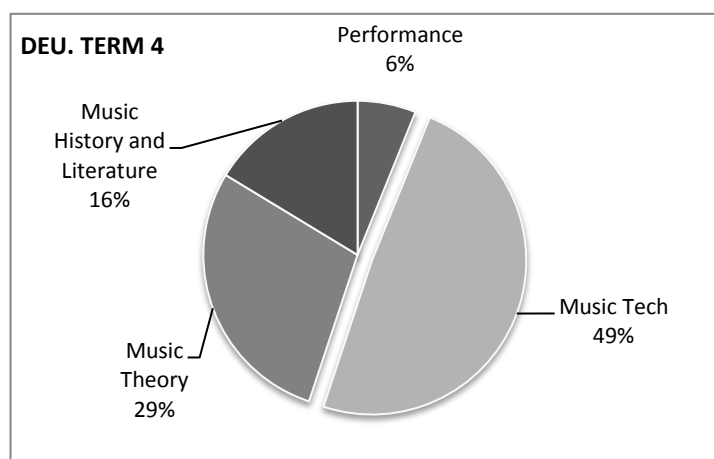


Figure 2.22 : The share of each category in percentages for DEU Music Technology Division, Term IV.

Most of the share is allocated to music technology courses with a total percentage of approximately 49%. Then follows music theory courses having a share of

approximately 28.6% and followed by music history & literature course with an approximate percentage of 16.3%. The last in the list is performance with a share of 6.1%.

Inonu University, music technology curriculum

Having a total of 16 credits Inonu University, Music Technology Division's curriculum has the fifth place in the number of total credits for fourth semester ranking. The part of the curriculum's belonging to the third semester of education in this particular program is shown in Table D.2. The overall shares of the categories of the fourth semester of this particular program are represented by a pie chart in Figure 2.23. The most of the share this term belongs to performance having approximately about 37.5% of the total credits. Then music theory classes follow, having a share of 25% of the overall credits of the term.

The percentage share of music technology courses in the third term of the curriculum of this particular program is 12.5%, which is also the percentage share for foreign language and music history & literature courses.

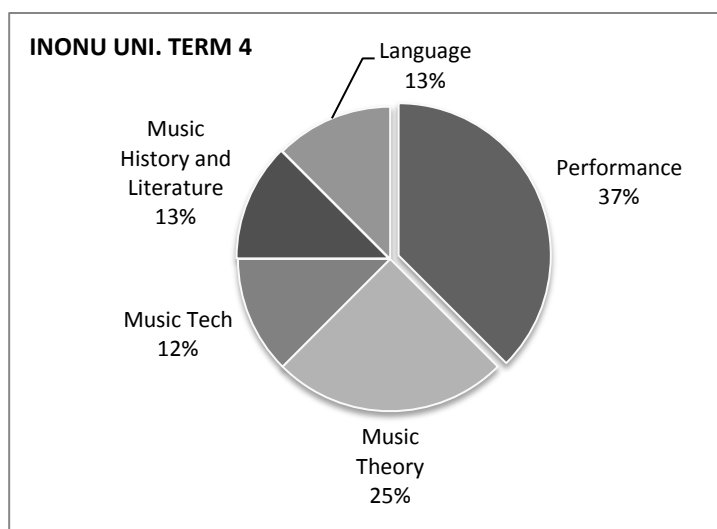


Figure 2.23 : The share of each category in percentages for Inonu Uni. Music Technology Division, Term IV.

The credit allocation for the fourth term in this particular program is just the same as the previous semester because of the continuation of the courses of the third semester.

Cumhuriyet University, music technology curriculum

Having a total of 27 credits Cumhuriyet University's Music Technology Division's curriculum has the first place in the number of total credits for fourth semester

rankings. The overall shares of the fourth semester of this particular program are represented by Figure 2.24. The most of the amount of credit shares this term again belongs to music theory and music technology each having about 33.3% of the total credits of the semester. The following category is “performance” with an approximate share of 11.1% of all the credits available this term. The rest of the courses belong to categories of music history & literature, information technology and YÖK courses, each having approximately 7.4% of the overall credits of the term. The credit allocation for the Cumhuriyet Uni. Music Technology division, in number of credits and percentages per category belonging to fourth semester of the four-year curriculum can be seen in Table D.3.

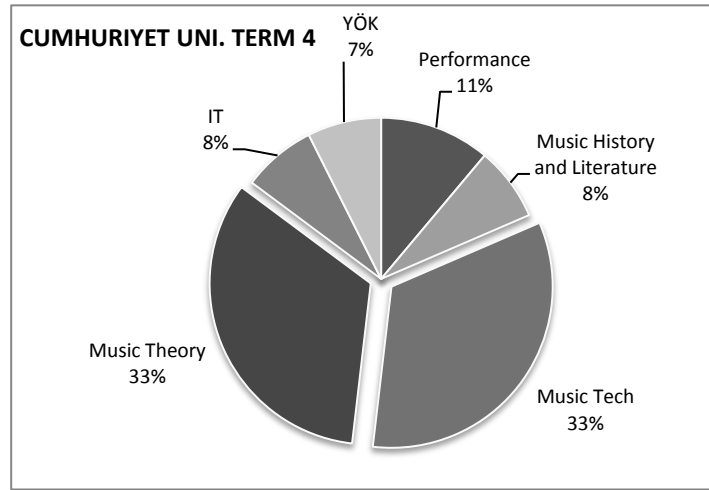


Figure 2.24 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Term IV.

ITU, TMDK, sound recordings curriculum

Istanbul Technical University, State Conservatory of Turkish Music, Department of Music Technologies, Sound Recordings Division has the third place in terms of total number of credits offered in the fourth semester of the four-year undergraduate curriculum with a total number of credits of 19.5. The credit allocation for the ITU Sound Recordings division, in number of credits and percentages per category belonging to fourth semester of the four-year curriculum can be seen in Table D.4. The overall shares of the fourth semester of this particular program are represented by a pie chart in Figure 2.25.

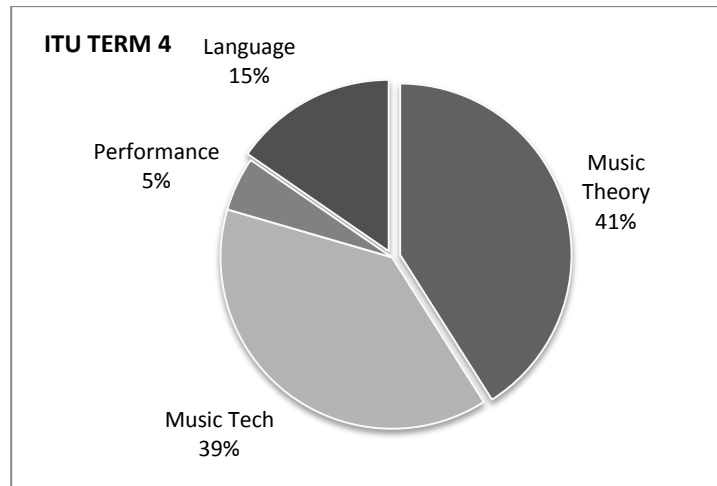


Figure 2.25 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Term IV.

The program is again, this semester the first in the ranking about the theory courses' overall credit allocation with a percentage of 41%. This is the highest rate of credits allocated to music theory courses in the fourth semester. The second place within the division's credits available for the fourth semester is the music technology category with an approximate percentage rate of 38.5%. What comes next is the foreign language course having an approximate percentage of 15.4% followed by the performance courses' percentage of 5.1%.

Suleyman Demirel University, music technology curriculum

Suleyman Demirel University, Faculty of Fine Arts, Department of Music, Musicology Arts Program, Music Technology Division shares the fourth place with Bilgi University's Music Program in terms of total number of credits offered in the fourth semester of the four-year undergraduate curriculum with a total number of credits of 18.

The program requires 8 credits from the electives' list. It is considered that the students would have gone for selecting the maximum number of music technology courses while not exceeding the term credits. Therefore, the available 8 credits in music technology electives are selected by the author. The overall shares of the fourth semester of this particular program are represented by a pie chart in Figure 2.26.

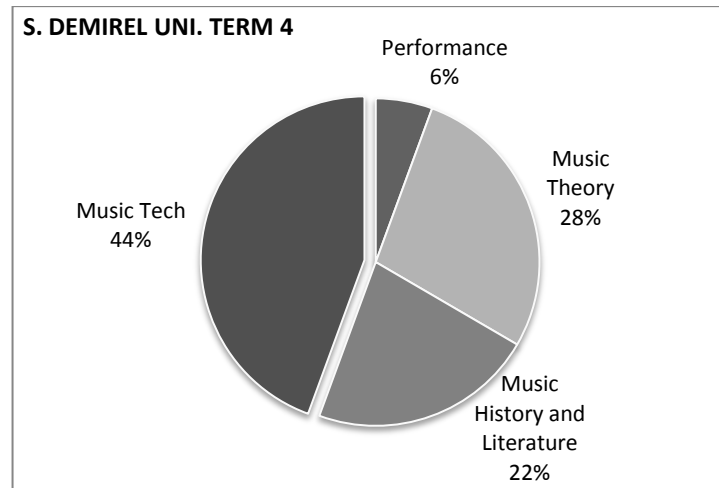


Figure 2.26 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Term IV.

The part of the curriculum's belonging to the fourth semester of the education in this particular program is shown in Table D.5. The most of the share this term belongs again to music technology (as in the previous terms) having approximately about 44.4% of the total credits. Then follow music theory with a share nearly about 27.8% of the overall credits of the term. The rest of the courses belonging to the categories of music history & literature and performance approximately have 22.2% and 5.6% of the overall credits of the term respectively.

Bilgi University, music curriculum

Bilgi University, Department of Music, Music Program, shares the fourth place with Suleyman Demirel's Music Technology Division's program in terms of total number of credits offered in the fourth semester of the four-year undergraduate curriculum with a total number of credits of 18. The part of the curriculum of the fourth semester of the education in this particular program is shown in Table D.6.

The share of music theory category is in the first rank within the semester's curriculum with a percentage of approximately 22.2%. The music history & literature, composition, music technology and performance categories have the same amount of credit share of approximately 16.7%. YOK course has an approximate percentage of 11.1% and is the last in the list. The overall shares of the fourth semester of this particular program are represented also in percentages and by a pie chart in Figure 2.27.

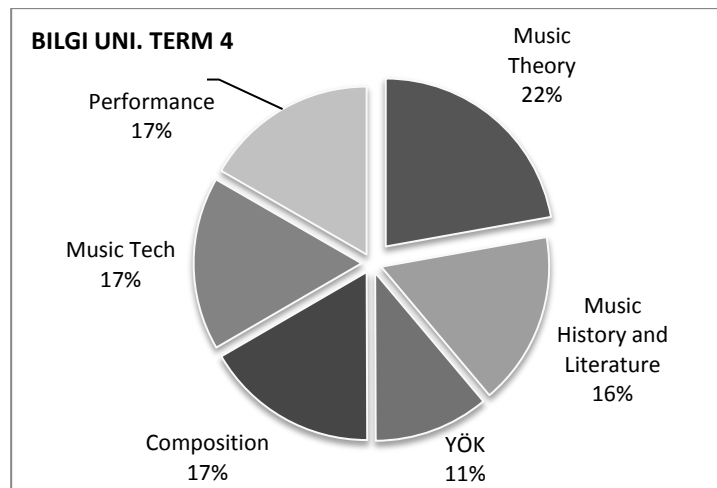


Figure 2.27 : The share of each category in percentages for Bilgi University, Music Department, Term IV.

YTU, audial design curriculum

Yildiz Technical University, Department of Music and Performing Arts, Audial Design Program has the sixth and last place in terms of total number of credits offered in the fourth semester of the four-year undergraduate curriculum with a total number of credits of 15 which can be observed in Table D.7.

The overall shares of the fourth semester of this particular program are represented by a pie chart in Figure 2.28.

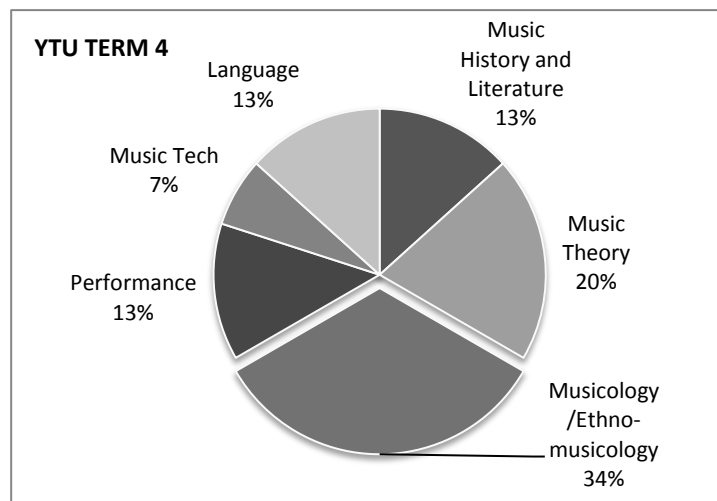


Figure 2.28 : The share of each category in percentages for YTU, Audial Design Department, Term IV.

In the overall curriculum of the fourth term, ‘musicology /ethnomusicology’ category has most of the shares as approximately 33.3%, while music theory has 20% of the total credits of the semester. Performance, language, and music history & literature courses have the same amount of credits with each other being approximately 13.3%

among the total number of credits the program offers. The last of the categories by share, is music technology and has an approximate percentage amount of 6.7% of the total credits of the semester. Music technology as a category occurred first time in this fourth term of this program and with a very weak share within the term.

2.1.3.5 Term V

In the fifth semester of the four-year undergraduate education, the total numbers of credits the programs have are shown in Table 2.6. Cumhuriyet UniDokuz Eylul University has spared 18 credits and is sharing this rank with Suleyman Demirel University. Inonu University is in the third place with 16 credits that is offered to music technology students in the fifth term. Bilgi University offers 15 credits and is in the fourth place where both YTU and ITU offers 14 credits and share the last rank. The fifth semester courses, which fall under the eleven categories, are represented for each program in the following section.

Table 2.6 : Total number of credits for undergraduate Music Technology programs in Turkey, Term V.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Dokuz Eylul	Music Technology	18	2
Inonu	Music Technology	16	3
Cumhuriyet	Music Technology	20	1
Istanbul Technical	Sound Recordings	14	5
Suleyman Demirel	Music / Music Technology	18	2
Bilgi	Music	15	4
Yildiz Technical	Audial Design	14	5

DEU, music technology curriculum

Having a total of 18 credits DEU Music Technology Division's curriculum has the second place in the ranking in terms of the number of total credits the programs offer for the fifth semester. The number of the courses offered by this program falls by number this semester relative to the previous one as can be derived by a comparison between Table D.1 and Table E.1.

The entire share is allocated to music technology courses with a total percentage of 100% and a total number of credits being 18. This is going to be the case for rest of the semesters, too. In the overall four-year curriculum, DEU music technology division is the only one who has a program whose technology courses has an approximate percentage of 66.5% being the highest among all of these programs. The overall shares of the categories of the fifth semester of this particular program are represented by a pie chart in Figure 2.29.

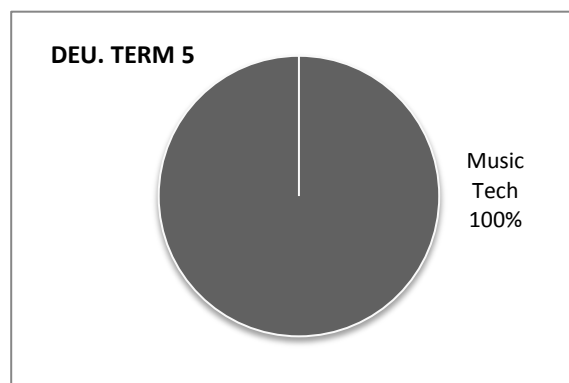


Figure 2.29 : The share of each category in percentages for DEU Music Technology Division, Term V.

Inonu University, DEU, music technology curriculum

Having a total of 16 credits Inonu Uni. Music Technology Division's curriculum has the third place in the number of total credits for fifth semester ranking. The overall shares of the categories of the fifth semester of this particular program are represented by a pie chart in Figure 2.30.

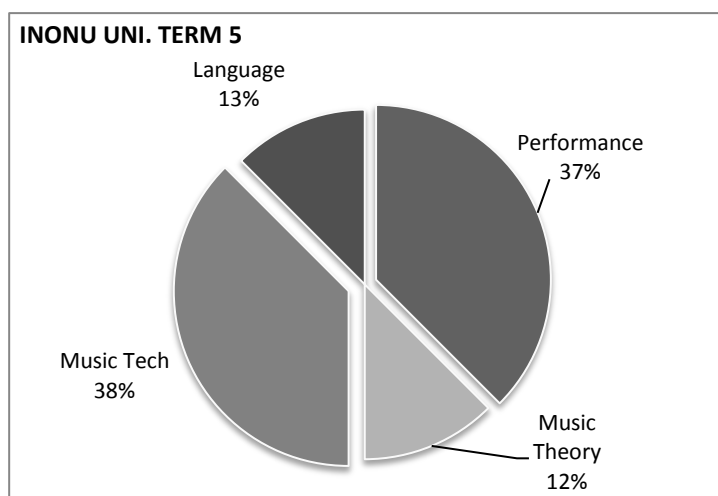


Figure 2.30 : The share of each category in percentages for Inonu Uni. Music Technology Division, Term V.

Credit allocation for this particular program in number of credits per category for the fifth semester of the four-year undergraduate education can be seen in Table E.2. The most of the shares this term belongs to both performance and music technology categories each having 37.5% and 37.5% of the total credits respectively. Then music theory classes and language courses follow each having a share of 12.5% of the overall credits of the term.

Cumhuriyet University, DEU, music technology curriculum

Having a total of 20 credits and with a significant decrease, Cumhuriyet University's music technology curriculum has the first place in the number of total credits for fifth semester rankings. The credit allocation for the Cumhuriyet University's Music Technology division, in number of credits and percentages per category belonging to fifth semester of the four-year curriculum along with individual courses can be seen in Table E.3.

The overall shares of the fifth semester of this particular program are represented by a pie chart in Figure 2.31. As can be seen in Figure 2.31 and Table E.3, the most of the amount of credit shares this term belongs to music theory having 45% of the total credits of the semester. The following category is music technology with a share of 25% of all the credits available this term. The rest of the courses belong to categories of performance and YÖK courses, each having 20% and 10% of the overall credits of the term.

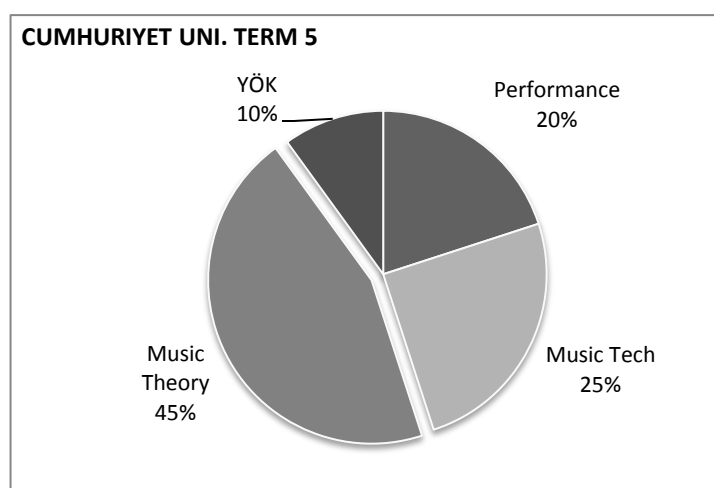


Figure 2.31 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Term V.

ITU, TMDK, sound recordings curriculum

Istanbul Technical University, State Conservatory of Turkish Music, Department of Music Technologies, Sound Recordings Division shares the fifth and last place in terms of total number of credits offered in the fifth semester of the four-year undergraduate curriculum with a total number of credits of 14. The program is again, this semester the first in the ranking about the theory courses' overall credit allocation with an approximated percentage of 46.4%. This is the highest rate of credits allocated to music theory courses in the fifth semester. The second place within the division's credits available for the fifth semester is the music technology category with an approximate percentage rate of 32.1%. What comes next is the elective courses under "other" category having an approximate percentage of 21.4%. The credit allocation for the ITU Sound Recordings division, in number of credits and percentages per category for belonging to fifth semester of the four-year curriculum can be seen in Table E.4. The overall shares of the fifth semester of this particular program are represented by a pie chart in Figure 2.32.

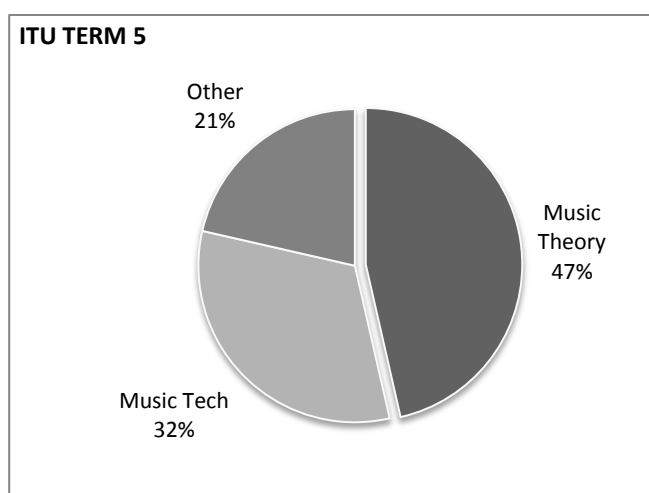


Figure 2.32 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Term V.

Starting from this semester on, including the current one, ITU's sound recordings program introduces electives to the rest of the curriculum. There is a list available for each term the selection from it is necessary. According to the program design, one of those electives will be selected from MT list of the relevant semester and will have 2 credits. The selection has been made with the same principle that is applied in the other programs, that is to say, in accordance with the aim to allocate maximum number of music technology courses in order to be fair and objective. The other

elective is not selected because it is already evident that the course will not be of any category relevant to the subject of this study and is anyhow under the “others” category. Instead, the credit value of the ITB course is counted as to be the category of “other.”

Suleyman Demirel University, music curriculum

Suleyman Demirel University, Faculty of Fine Arts, Department of Music, Musicology Arts Program, Music Technology Division shares the second place with Dokuz Eylul University’s Music Technology Program in terms of total number of credits offered in the fifth semester of the four-year undergraduate curriculum with a total number of credits of 18.

The program requires 8 credits from the electives’ list. It is considered that the students would have gone for selecting the maximum number of music technology courses while not exceeding the term credits. Therefore, the available 8 credits in music technology electives are selected by the author. The overall shares of the fifth semester of this particular program is represented by a pie chart in Figure 2.33 and the part of the curriculum’s belonging to the fifth semester of the education in this particular program is shown in Table E.5.

As shown with Figure 2.33 and Table E.5, the most of the share this term belongs again to music technology (as in the previous terms) having approximately about 44.4% of the total credits.

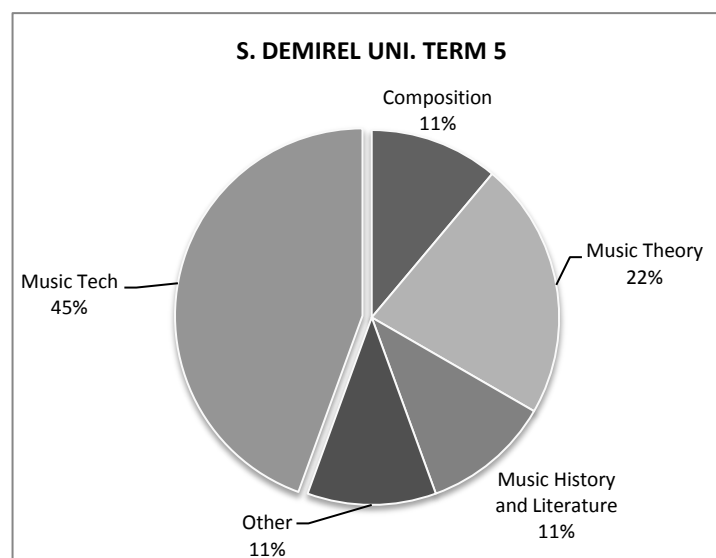


Figure 2.33 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Term V.

Music theory category has a share about 22.2% of the overall credits of the term. The rest of the courses belong to the categories of music history & literature, composition and “other” categories each equally having approximately 11.1% of the overall credits of the term.

Bilgi University, music curriculum

Bilgi University, Department of Music, Music Program, has the fourth place in ranking in terms of total number of credits offered in the fifth semester of the four-year undergraduate curriculums and offers a total number of credits of 15. The overall shares per category regarding the fifth semester of education of this particular program are represented also in percentages and by a pie chart in Figure 2.34. The credit allocation for each individual course the program offers in the fifth semester of the curriculum can be seen in Table E.6.

The share of music technology category is in the first rank within the semester’s curriculum with a percentage of 60%. The music theory and composition categories have the same amount of credit share of approximately 20%.

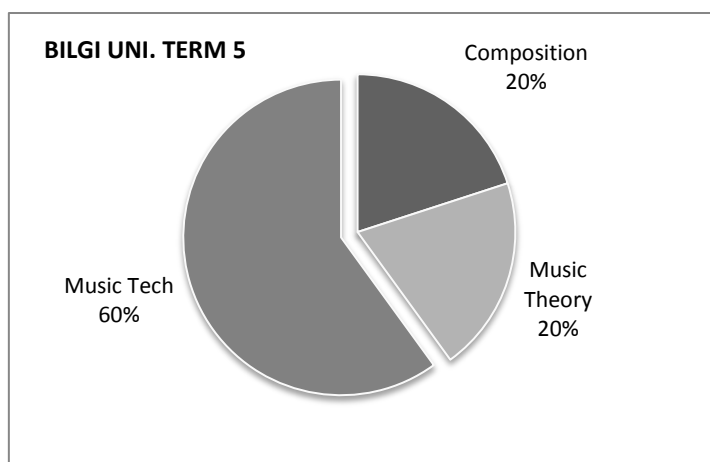


Figure 2.34 : The share of each category in percentages for Bilgi University, Music Department, Term V.

YTU, audial design curriculum

Yildiz Technical University, Department of Music and Performing Arts, Audial Design Program shares the fifth and last place with ITU in terms of total number of credits offered in the fifth semester of the four-year undergraduate curriculum. The total number of credits offered this term is 14 and is illustrated as a pie chart in Figure 2.35. The overall shares of the individual courses the fifth semester of this particular program are represented in Table E.7.

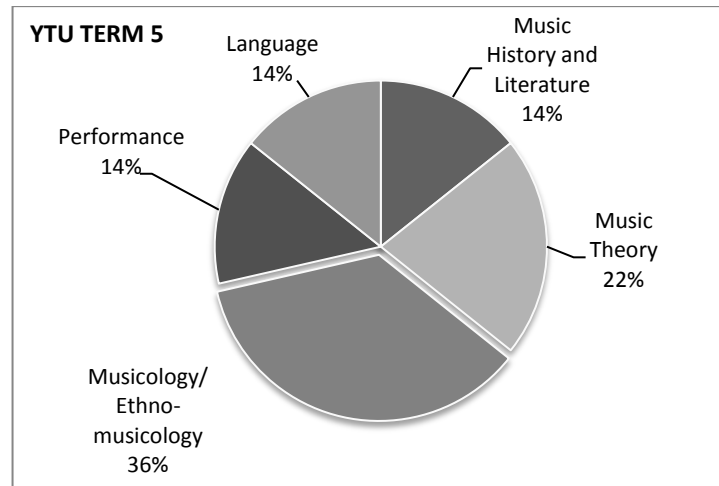


Figure 2.35 : The share of each category in percentages for YTU, Audial Design Department, Term V.

In the overall curriculum of the fifth term, ‘musicology /ethnomusicology’ category has most of the shares as 35.7%, while music theory has approximately 21.4% of the total credits of the semester. Performance, language, and music history & literature courses have the same amount of credits with each other being approximately 14.3% among the total number of credits the program offers. Music technology as a category occurred first time in the fourth term of this program and with a very weak share within the term. In the fifth term of the program, it disappears again.

2.1.3.6 Term VI

In the sixth semester of the four-year undergraduate education, the total numbers of credits the programs have are shown in Table 2.7.

Table 2.7 : Total number of credits for undergraduate Music Technology programs in Turkey, Term VI.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Dokuz Eylul	Music Technology	18	1
Inonu	Music Technology	16	2
Cumhuriyet	Music Technology	18	1
Istanbul Technical	Sound Recordings	18	1
Suleyman Demirel	Music / Music Technology	18	1
Bilgi	Music	15	3
Yildiz Technical	Audial Design	16	2

These sixth semester courses, which fall under the eleven categories, are represented for each program in the following section.

DEU, music technology curriculum

Having a total of 18 credits, DEU Music Technology Division's curriculum has the first place in the ranking in terms of the number of total credits the programs offer for the sixth semester and shares this place with Cumhuriyet, ITU and Suleyman Demirel Universities. This credit allocation implemented by the division can be seen in Table F.1.

All of the credits are allocated to music technology courses with a total percentage of 100% and a total number of credits being 18. The overall shares of the sixth semester of this particular program are represented also in percentages and by a pie chart in Figure 2.36.

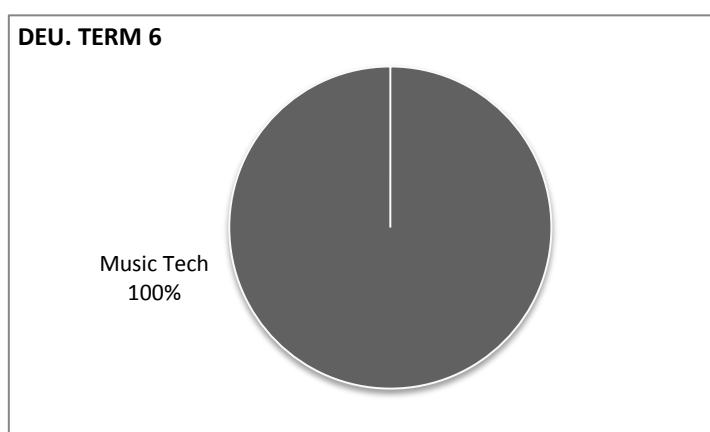


Figure 2.36 : The share of each category in percentages for DEU Music Technology Division, Term VI.

Inonu University, music technology curriculum

Having a total of 16 credits Inonu Uni. Music Technology Division's curriculum has the second place in the number of total credits for sixth semester ranking and shares this place with Yildiz Technical University's Audial Design program.

The overall shares of the categories of the sixth semester of this particular program are represented by a pie chart in Figure 2.37. Credit allocation for this particular program in number of credits per category for the sixth semester of the four-year undergraduate education can be seen in Table F.2.

As shown with Table F.2 and Figure 2.37, the most of the credit shares belongs to performance category this term, having 37.5% of the total credits. Then music

technology and music theory classes follow each having a share of 25%. Language courses follow with 12.5% of the overall credits of the term.

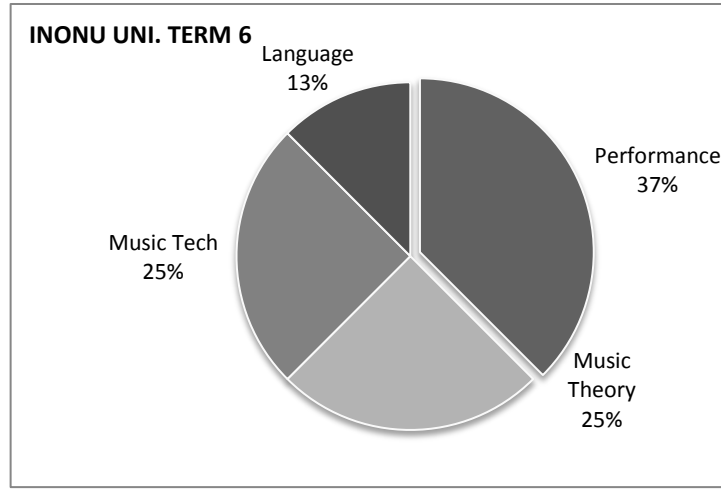


Figure 2.37 : The share of each category in percentages for Inonu Uni. Music Technology Division, Term VI.

Cumhuriyet University, music technology curriculum

Having a total of 18 credits, Cumhuriyet University's Music Technology Division's curriculum has the first place in the ranking in terms of the number of total credits the programs offer for the sixth semester and shares this place with DEU, ITU and Suleyman Demirel Universities. The credit allocation for the Cumhuriyet University's Music Technology division, in number of credits and percentages per category belonging to sixth semester of the four-year curriculum can be seen in Table F.3.

The most of the amount of credit shares this term belongs to music theory having approximately 38.9% of the total credits of the semester. The following category is "music technology" with a share of 27.8% of all the credits available this term. The rest of the courses belong to categories of performance and YOK courses, each having approximately 22.2% and 11.1% of the overall credits of the term. The overall shares of the sixth semester of this particular program are represented by a pie chart in Figure 2.38.

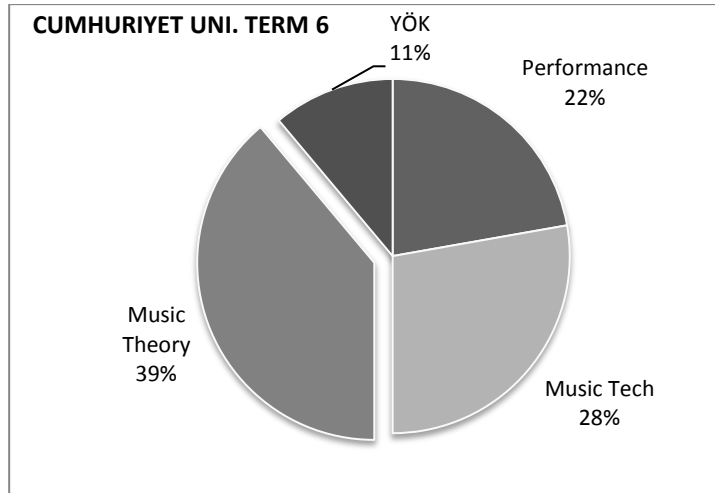


Figure 2.38 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Term VI.

ITU, TMDK, sound recordings curriculum

Having 18 credits, ITU Sound Recordings division's curriculum has the first place in the ranking in terms of the number of total credits the programs offer for the sixth semester and shares this place with DEU, Cumhuriyet University, and Suleyman Demirel Universities. The credit allocations for ITU Sound Recordings division, in number of credits and percentages per category for term VI can be seen in Table F.4. The overall shares of the sixth semester of this particular program are represented by a pie chart in Figure 2.39.

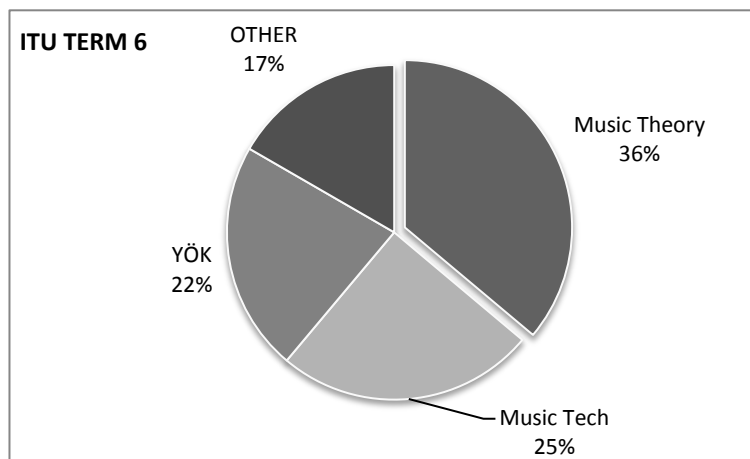


Figure 2.39 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Term VI.

The most of the amount of credit shares this term belongs to music theory having approximately 36.1% of the total credits of the semester. The second place within the division's credits available for the sixth semester is the music technology category with a percentage rate of 25%. What comes next is the YOK course having an

approximate percentage of 22.2%. The last in the list with an approximate credit amount as 16.7% is the elective from ITB list, which is counted under the “other” category.

Suleyman Demirel University, music technology curriculum

Having 18 credits, Suleyman Demirel University’s Music Technology Division curriculum has the first place in the ranking in terms of the number of total credits the programs offer for the sixth semester and shares this place with DEU, Cumhuriyet University, and ITU Sound Recordings division. The credit allocation for this particular program in number of credits and percentages per category belonging to sixth semester of the four-year curriculum can be seen in Table F.5.

The program requires 8 credits from the electives’ list. It is considered that the students would have gone for selecting the maximum number of music technology courses while not exceeding the term credits. Therefore, the available 8 credits in music technology electives are selected by the author. The overall shares of the sixth semester of this particular program are represented by a pie chart in Figure 2.40.

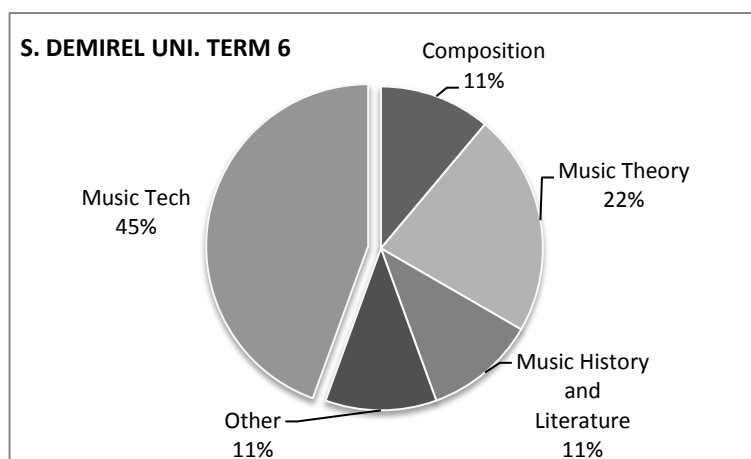


Figure 2.40 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Term VI.

As shown in Figure 2.40, the most of the share this term belongs again to music technology category as in the previous terms, having approximately about 44.4% of the total credits. Music theory courses have a share nearly about 22.2% among entire credits of the term. The rest of the courses belong to the categories of music history & literature, composition and other categories with each equally having approximately 11.1% of the overall credits of the term.

Bilgi University, music curriculum

Bilgi University, Department of Music, Music Program, has the third and the last place in ranking in terms of total number of credits offered in the sixth semester of the four-year undergraduate curriculums and offers a total number of credits of 15. The credit allocation for this particular program in number of credits and percentages per category belonging to sixth semester of the four-year curriculum can be seen in Table F.6.

The share of music technology category is in the first rank within the semester's curriculum with a percentage of 60%. The music theory and composition categories have the same amount of credit share of approximately 20%. The overall shares of the sixth semester of this particular program are represented also in percentages and by a pie chart in Figure 2.41.

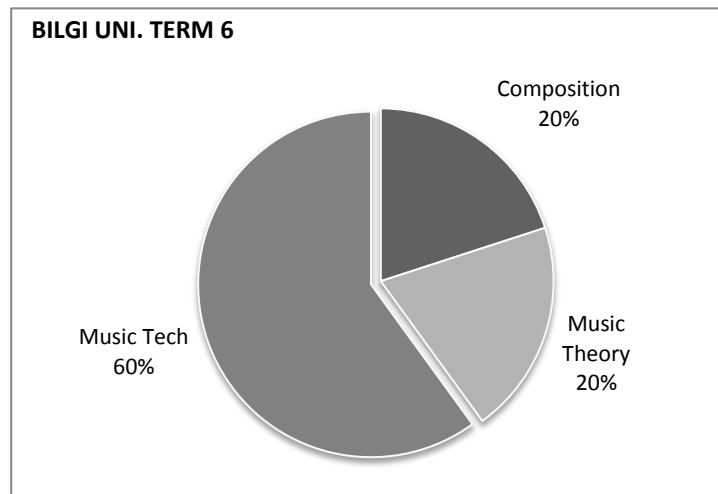


Figure 2.41 : The share of each category in percentages for Bilgi University, Music Department, Term VI.

YTU, audial design curriculum

Yildiz Technical University, Audial Design program shares the second place with Inonu University in terms of total number of credits offered in the sixth semester of the whole curriculum of four-year undergraduate education with a total number of credits of 16 and which can be observed in Table F.7. The overall shares of the sixth semester of this particular program are represented by a pie chart in Figure 2.42.

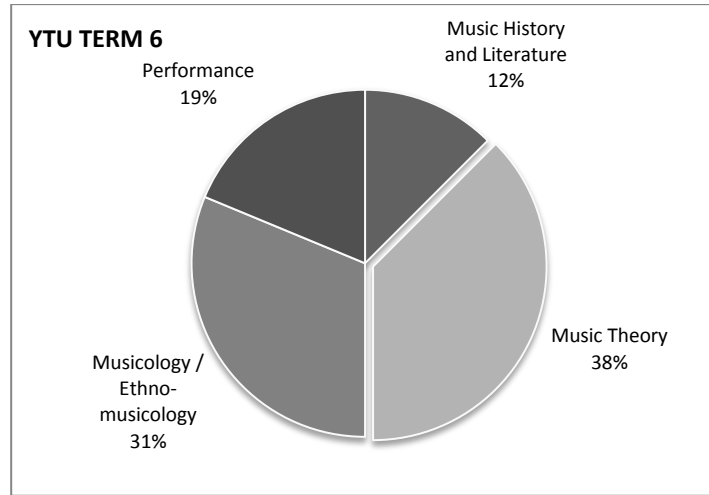


Figure 2.42 : The share of each category in percentages for YTU, Audial Design Department, Term VI.

In the sixth term, music theory category has most of the shares as 37.5%, while ‘musicology /ethnomusicology’ has 31.3% of the total credits of the semester. Performance and music history & literature courses have the amount of credits being 18.8% and 12.5% of the total number of credits respectively. Music technology as a category occurred first time in the fourth term of this program and with a very weak share within the term. In the fifth and sixth terms of the program, it disappears again.

2.1.3.7 Term VII

In the seventh semester of the undergraduate education, the total numbers of credits of the programs are shown in Table 2.8.

Table 2.8 : Total number of credits for undergraduate Music Technology programs in Turkey, Term VII.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Dokuz Eylul	Music Technology	13	5
Inonu	Music Technology	11	6
Cumhuriyet	Music Technology	14,5	4
Istanbul Technical	Sound Recordings	17,5	2
Suleyman Demirel	Musicology Arts/ Music Technology	15	3
Bilgi	Music	15	3
Yildiz Technical	Audial Design	20	1

The seventh semester courses, which fall under the eleven categories, are represented for each program in this section. YTU offers the most number of credits(20) in this particular term where Inonu University is the last in the ranking with 11 credits it allocates for the seventh semester. ITU follows YTU with 17,5 credits and is followed by Suleyman Demirel and Bilgi universities, each of which offers 15 credits.

DEU, music technology curriculum

Having a total of 13 credits, DEU Music Technology Division's curriculum has the fifth place in the ranking in terms of the number of total credits the programs offer for the seventh semester. The credit allocations for this semester can be seen in the Table G.1.

The entire share is allocated to music technology courses with a total percentage of 100% and a total number of credits being 18. With no credits attached, DEU music technology division offers 200 hours of internships this semester, which is unique to this particular program. The overall shares of the seventh semester of the program are represented also in percentages and by a pie chart in Figure 2.43.

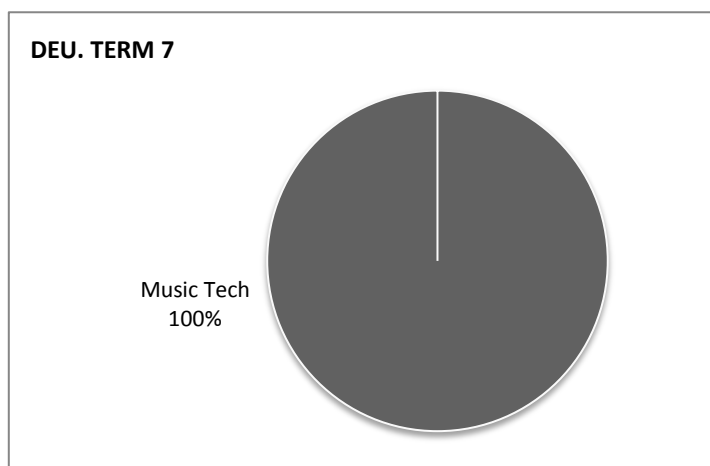


Figure 2.43 : The share of each category in percentages for DEU Music Technology Division, Term VII.

Inonu University, music technology curriculum

Having a total of 11 credits Inonu Uni. Music Technology Division's curriculum has the sixth and the last place in the number of total credits for seventh semester ranking. The overall shares of the categories of the seventh semester of this particular program are represented by a pie chart in Figure 2.44. Credit allocation for this

particular program in number of credits per category for the seventh semester of the four-year undergraduate education can be seen in Table G.2.

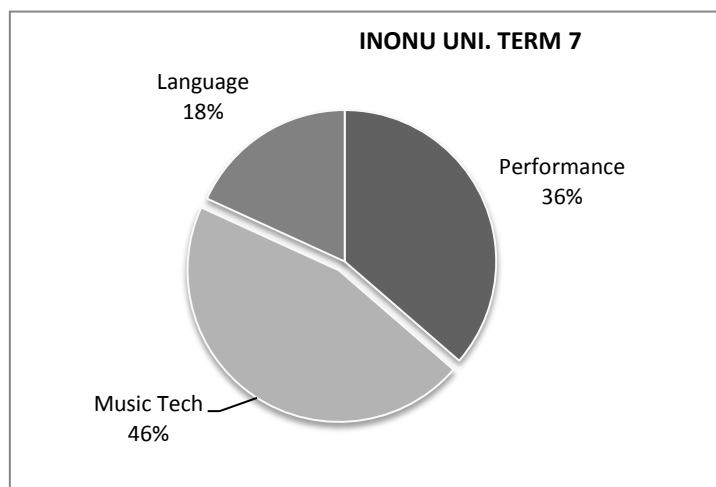


Figure 2.44 : The share of each category in percentages for Inonu Uni. Music Technology Division, Term VII.

The most of the shares this term belongs to music technology category having an approximate 45.5% of the total credits. Then performance category follows by having an approximate share of 36.4%. Language courses follow with an approximate share of 18.1% of the overall credits of the term.

Cumhuriyet University, music technology curriculum

The overall shares of the seventh semester of this particular program are represented by a pie chart in Figure 2.45.

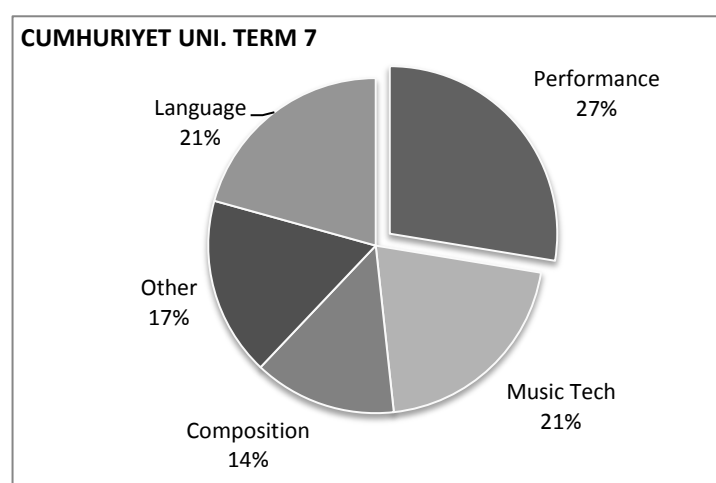


Figure 2.45 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Term VII.

Having a total of 14.5 credits, Cumhuriyet University's Music Technology Division's curriculum has the fourth place in the ranking in terms of the number of total credits the programs offer for the seventh semester. The credit allocation for the Cumhuriyet University's Music Technology division, in number of credits and percentages per category belonging to seventh semester of the four-year curriculum can be seen in Table G.3. The most of the amount of credit shares this term belongs to performance having approximately 27.6% of the total credits of the semester. The following category is shared among music technology and language categories each of the category having an approximate share of 20.7% of all the credits available this term. The rest of the courses belong to categories of 'other' and composition courses, each having approximately 17.2% and 13.8% of the overall credits of the term respectively.

ITU, TMDK, sound recordings curriculum

Having 17.5 credits, ITU Sound Recordings division's curriculum has the second place in the ranking in terms of the number of total credits the programs offer for the seventh semester. The credit allocation for ITU Sound Recordings division, in number of credits and percentages per category belonging to seventh semester of the four-year curriculum can be seen in Table G.4. The overall shares of the seventh semester of this particular program are represented by a pie chart in Figure 2.46.

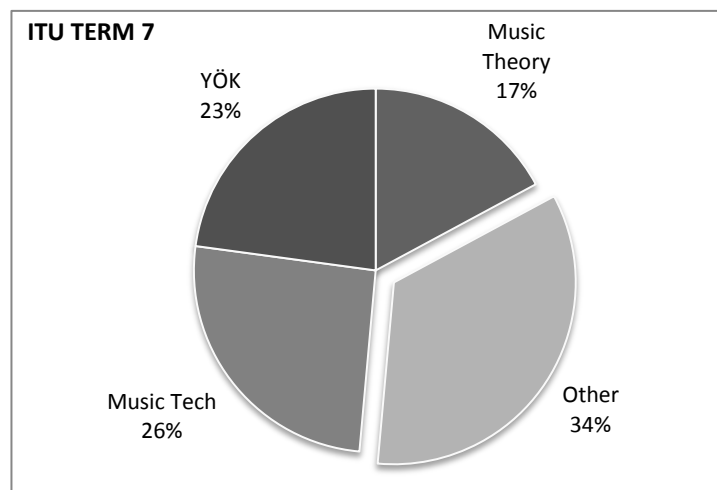


Figure 2.46 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Term VII.

The most of the amount of credit shares this term belongs to the "other" category having approximately 34.3% of the total credits of the semester. The second place within the division's credits available for the seventh semester is the music

technology category with a percentage rate of 25.7%. What comes next is the YOK course having an approximate percentage of 22.9%. The last in the list with an approximate credit amount as 17.1% is music theory category.

Suleyman Demirel University, music technology curriculum

Having a total of 15 credits, Suleyman Demirel University's Music Technology Division curriculum has the third place in the ranking in terms of the number of total credits the programs offer for the seventh semester and shares this place with Bilgi University' music program. The most of the share (about 53.3%) belongs to the category of "other" this term. Music technology courses have a share nearly about 46.7% of the overall credits of the term. The credit allocation for this particular program, in number of credits and percentages per category for belonging to seventh semester of the four-year curriculum can be seen in Table G.5. The overall shares of the seventh semester of this particular program are represented by a pie chart in Figure 2.47.

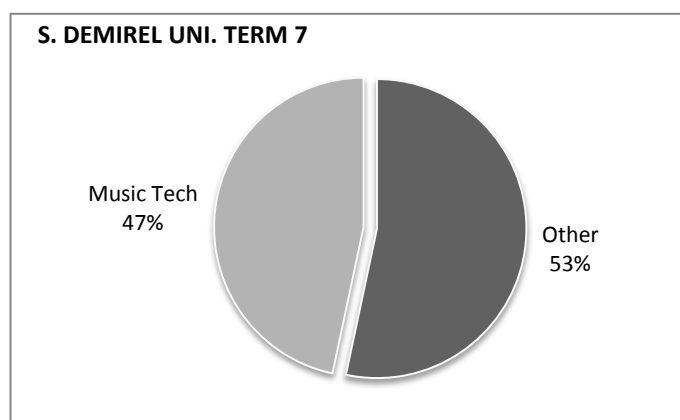


Figure 2.47 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Term VII.

The program requires at least 7 credits from the electives' list. It is considered that the students would have gone for selecting the maximum number of music technology courses while not exceeding the term credits. Therefore, the available 7 credits in music technology electives are selected by the author.

Bilgi University, music curriculum

Bilgi University, Department of Music, Music Program offers a total number of credits of 15, having the third place in ranking in terms of total number of credits and shares it with Suleyman Demirel University's music program. . The credit allocation

for this particular program, in number of credits and percentages per category as explained above and which are belonging to the seventh semester of the four-year curriculum can be seen in Table G.6. The overall shares of the seventh semester of this particular program are represented also in percentages and by a pie chart in Figure 2.48.

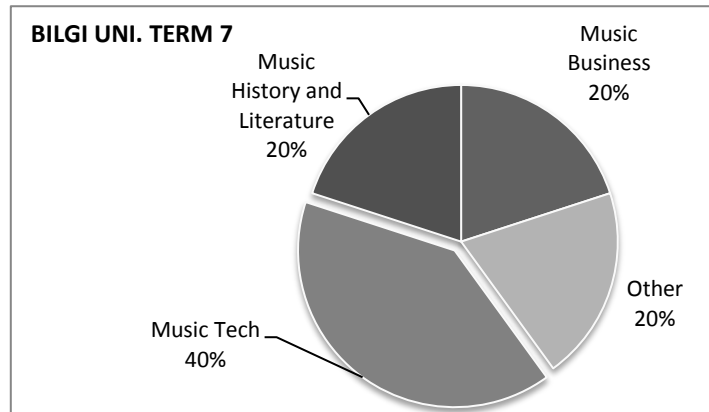


Figure 2.48 : The share of each category in percentages for Bilgi University, Music Department, Term VII.

The share of music technology category is in the first rank within the semester's curriculum with a percentage of 40%. The music business, music history & literature and "other" categories have the same amount of credit share of 20%. The credit allocations can be seen on the tables below. Bilgi University is the first program met offering a music business course until this moment in the study.

YTU, audial design curriculum

Yildiz Technical University, Department of Music and Performing Arts, Audial Design Program, by offering 16 credits, is in the first place in the ranking in terms of total number of credits offered in the seventh semester of the four-year undergraduate curriculum. The overall shares of the seventh semester of this particular program are represented by a pie chart in Figure 2.49. The credit allocation for this particular program, in number of credits and percentages per category as explained above and are belonging to seventh semester of the four-year curriculum can be seen in Table G.7.

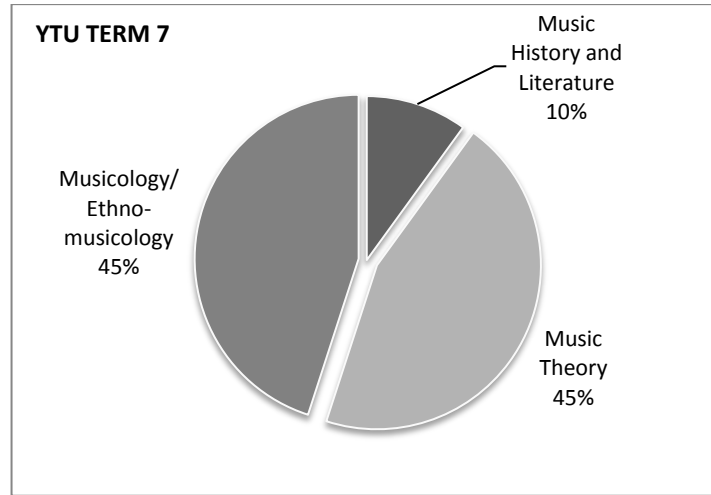


Figure 2.49 : The share of each category in percentages for YTU, Audial Design Department, Term VII.

In the overall curriculum of the seventh semester, music theory category and ‘musicology /ethnomusicology’ both have 45% of the shares of the total credits of the semester. Music history & literature category has 10% of the overall term credits. Music technology as a category occurred in the fourth term of this program and with a very weak share within the term. In the fifth, sixth and seventh terms of the program, it disappears again.

2.1.3.8 Term VIII

In the eighth semester of the four-year undergraduate education, the total numbers of credits the programs have are shown in Table 2.9. The eighth semester courses which fall under the eleven categories are represented for each program in the following section.

Table 2.9 : Total number of credits for undergraduate Music Technology programs in Turkey, Term VIII.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Dokuz Eylul	Music Technology	11	5
Inonu	Music Technology	11	5
Cumhuriyet	Music Technology	13,5	4
Istanbul Technical	Sound Recordings	16	1
Suleyman Demirel	Musicology Arts/ Music Technology	15	2
Bilgi	Music	15	2
Yildiz Technical	Audial Design	14	3

ITU sound recordings curriculum has the most credits to offer in the last term of education where the least amount of credits is 11 and is offered by Dokuz Eylul University and Inonu University. Both Bilgi and Suleyman Demirel universities allocate 15 credits for the eighth term.

DEU, music technology curriculum

Having a total of 11 credits, DEU Music Technology Division's curriculum has the fifth place in the ranking in terms of the number of total credits the programs offer for the eighth semester. However, the program is again in the first place in the ranking in terms of total credits music technology classes have. This term also includes a hundred percent music technology classes as shown in Figure 2.50. The eighth term is the term where students are required to conduct a thesis study, which counts for one credit. The credit allocations can be seen in the Table H.1.

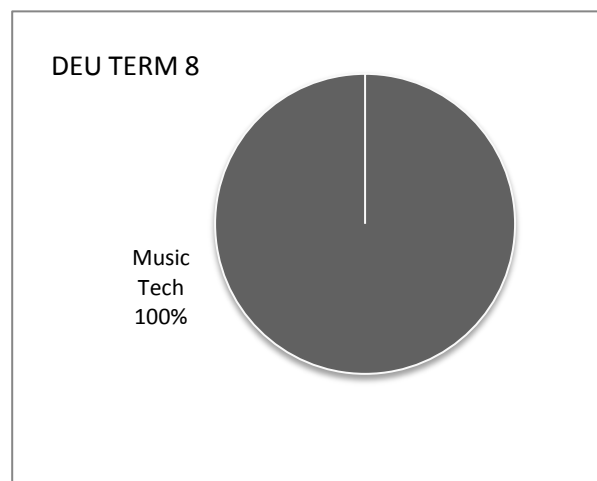


Figure 2.50 : The share of each category in percentages for DEU Music Technology Division, Term VIII.

Inonu University, music technology curriculum

Having a total of 11 credits Inonu Uni. Music Technology Division's curriculum has also the fifth place in the number of total credits for eighth semester ranking.. The overall shares of the categories of the eighth semester of this particular program are represented in Figure 2.51.

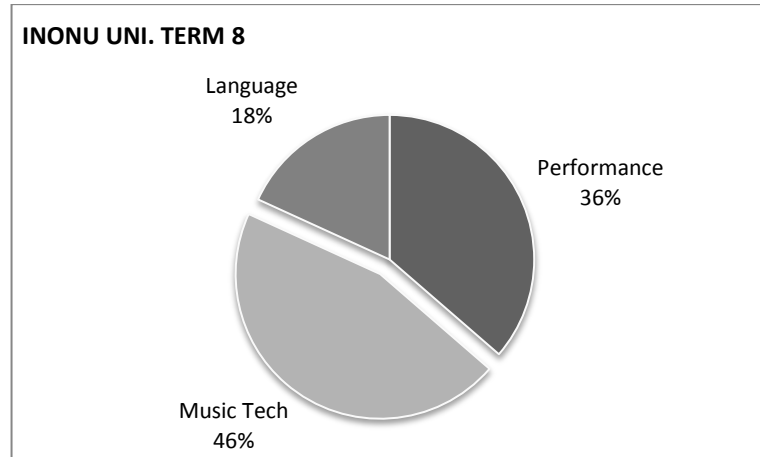


Figure 2.51 : The share of each category in percentages for Inonu Uni. Music Technology Division, Term VIII.

The most of the shares this term belongs to music technology category having an approximate 45.5% of the total credits. Then performance category follows by having an approximate share of 36.4%. Language courses follow with an approximate share of 18.1% of the overall credits of the term. The mentioned credit allocation for this particular program in number of credits per category for the eighth semester of the four-year undergraduate education can be seen in the Table H.2.

Cumhuriyet University, music technology curriculum

Having a total of 13.5 credits, Cumhuriyet University's Music Technology Division's curriculum has the fourth place in the ranking in terms of the number of total credits the programs offer for the eighth semester. The credit allocation for the Cumhuriyet University's Music Technology division, in number of credits and percentages per category belonging to eighth semester of the four-year curriculum can be seen in Table H.3. The overall shares of the eighth semester of this particular program are also represented by a pie chart in Figure 2.52.

As listed in Table H.3 and shown with Figure 2.52, the most amount of credit shares this term belongs to performance having approximately 29.6% of the total credits of the semester. The following category is language having an approximate share of 22.2%. The "other" category follows by having an approximate share of 18.5%. The rest of the credits are shared among music technology and music history & literature categories each of the category having an approximate share of 14.8% of all the credits available this term.

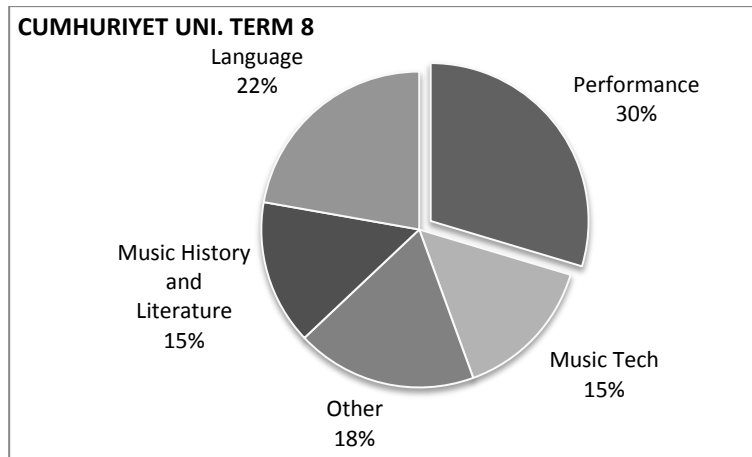


Figure 2.52 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Term VIII.

ITU, TMDK, sound recordings curriculum

Having 16 credits, ITU Sound Recordings division's curriculum has the first place in the ranking in terms of the number of total credits the programs offer for the eighth semester. The credit allocation for ITU Sound Recordings division, in number of credits and percentages per category belonging to eighth semester of the four-year curriculum is shown in Table H.4. The overall shares of the eighth semester of this particular program are also represented by a pie chart in Figure 2.53.

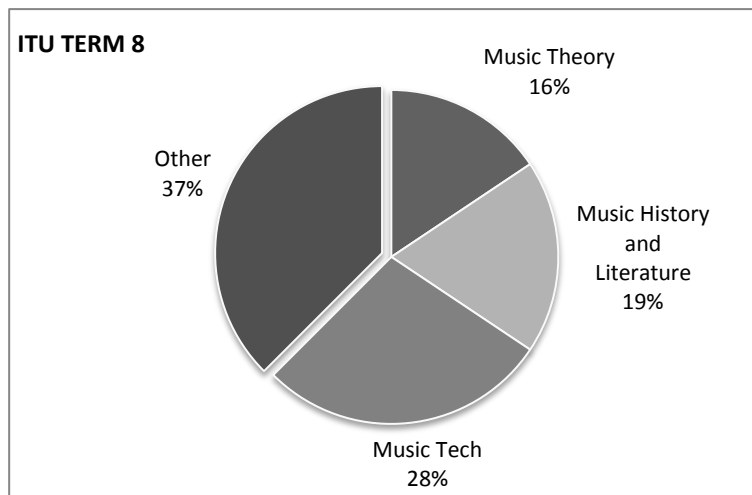


Figure 2.53 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Term VIII.

As Table H.4 suggests, the most of the amount of credit shares this term belongs to the “other” category having 37.5% of the total credits of the semester. The second place within the division's credits available for the eighth semester belongs to music technology with an approximate percentage of 28.1%. What comes next is the music history & literature course which is taught also from an ethnomusicological

perspective and has a percentage of 18.8%. Music theory has an approximate percentage rate of 15.6%.

Suleyman Demirel University, music technology curriculum

Having a total of 15 credits, Suleyman Demirel University's Music Technology Division curriculum has the second place in the ranking in terms of the number of total credits the programs offer for the eighth semester and shares this place with Bilgi University's music program. The most of the share this term is spared to the category of "other," approximately about 53.3% of the total credits. Music technology category has a share nearly about 46.7% of the overall credits of the term. The credit allocation for this particular program, in number of credits and percentages per category belonging to eighth semester of the four-year curriculum can be seen in Table H.5. The overall shares of the eighth semester of this particular program are represented by a pie chart in Figure 2.54.

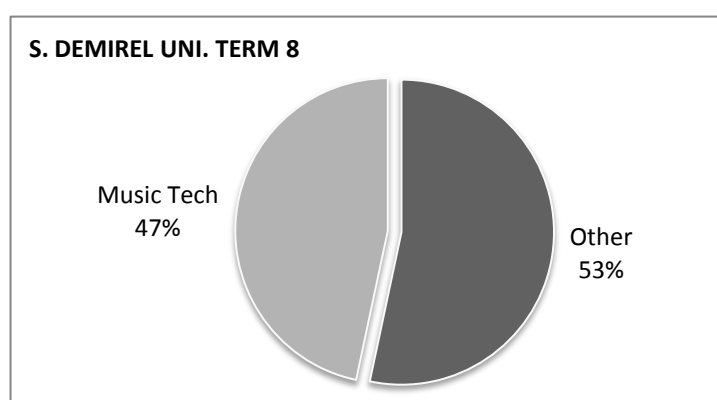


Figure 2.54 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Term VIII.

For this term, the program requires at least 7 credits from the electives' list. It is considered that the students would have gone for selecting the maximum number of music technology courses while not exceeding the term credits. Therefore, the available 7 credits in music technology electives are selected by the author.

Bilgi University, music curriculum

Bilgi University, Department of Music, Music Program offers a total number of credits of 15 having the second place in ranking in terms of total number of credits and shares it with Suleyman Demirel University's music program. The credit allocation for this particular program, in number of credits and percentages per category belonging to eighth semester of the four-year curriculum can also be seen in

Table H.6. The overall shares of the eighth semester of this particular program are represented by a pie chart in Figure 2.55.

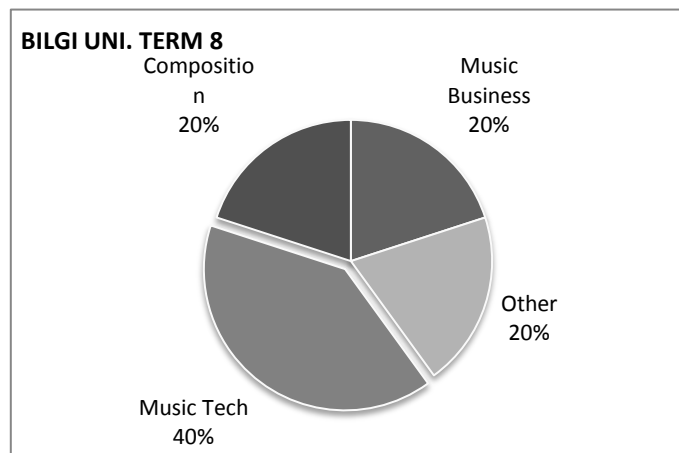


Figure 2.55 : The share of each category in percentages for Bilgi University, Music Department, Term VIII.

The share of music technology category is in the first rank within the semester's curriculum with a percentage of 40%. The music business, composition and "other" categories have the same amount of credit share of 20%. These shares can be seen in Figure 2.55 where the overall shares of the eighth semester of this particular program are represented also in percentages and by a pie chart.

YTU, audial design curriculum

YTU, by offering 14 credits, is in the third place in the ranking in terms of total number of credits offered in the eighth semester of the curriculum. The overall shares of the eighth semester of this particular program are represented by a pie chart in Figure 2.56.

As illustrated in Figure 2.56, in the overall curriculum of the eighth semester, music theory category and 'musicology /ethnomusicology' both have an approximate 43% of the shares of the total credits of the semester. Music history & literature category has 14% of the overall term credits. Music technology as a category occurred in the fourth term of this program and with a very weak share within the term. In the terms of the program that come after the fourth, music technology disappears again. The credit allocation for this particular program, in number of credits and percentages per category belonging to eighth semester of the four-year curriculum can also be seen in Table H.7.

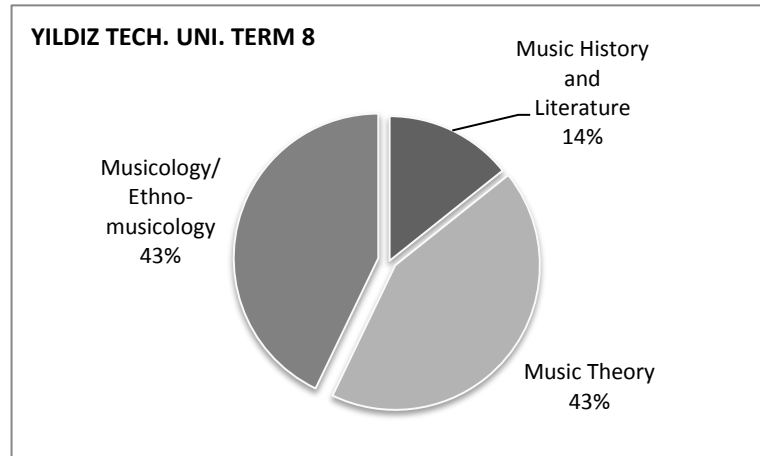


Figure 2.56 : The share of each category in percentages for YTU, Audial Design Department, Term VIII.

2.1.4 Overall evaluation of Turkish music technology curricula (2009-2012)

The total number of credits each individual program offers during the four-year undergraduate curriculum is listed in Table 2.10.

Table 2.10 : The total number of credits of Music Technology programs in Turkey.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL CREDITS	RANK
Dokuz Eylul	Music Technology	163	2
Inonu	Music Technology	124	6
Cumhuriyet	Music Technology	157	3
Istanbul Technical	Sound Recordings	142,5	4
Suleyman Demirel	Musicology Arts/ Music Technology	165	1
Bilgi	Music	132	5
Yildiz Technical	Audial Design	113	7

The elaborated seven programs differ from each other in credit allocation both on termly and overall levels. As seen on Table 2.10, Suleyman Demirel University (165 total credits) is in the first place in the ranking in terms of total number of credits offered within the time of the four year undergraduate curriculum and is followed by Dokuz Eylul University (163 total credits). Cumhuriyet University is third in line with 157 credits. ITU is in the fourth place in this ranking and it is followed by Bilgi University with 132 credits it offers. Inonu University has the sixth place with 124

credits and Yildiz technical university is the last in line with 113 credits it has for the full curriculum.

When the programs are compared in terms of credits distributed along time (the semesters), it is possible to see the change in distribution along terms and between universities with a graph in Figure 2.57. As shown on the graph, the most linear and uniform credit distribution over time belongs to Bilgi, Istanbul Technical and Inonu universities. As it might seem no surprise at the very first glance because one can easily come to a conclusion as this being a result of the total number of credits offered. In other words, a misconception might be made by establishing a false relationship between the total number of credits offered during the four-year undergraduate curriculum and their distribution over time. However, by overlooking, it can be realized that the schools who have a linear distribution over time are not necessarily the ones who offer the least number of credits during the four-year undergraduate curriculum. If it were the case, Yildiz Technical University should have been in the first rank among the schools in terms of achieving uniformity in the distribution of credits over terms.

The distribution of credits over time is related to nothing more than the decision made by the curriculum developer and depends highly upon the questions of optimizing the use of resources and the efficacy of the teaching/ learning activities. Such a distribution into categories of course will vary quite a bit from institution to institution. Indeed, institutions differ greatly as to the available teaching resources and as to the preparation of their students at entrance, and hence will need to distribute credits in an appropriate way [16]. Therefore, revisions have to be made in terms of credit distribution taking into consideration that the students' workload amounts cannot indicate huge shifts from semester to semester.

The programs share some general features in common that can be listed as follows:

- All of the programs have courses belonging to the categories of performance, music theory, music history & literature, music technology and YOK. (YOK courses are compulsory in all of the universities in Turkey).
- All of the programs have courses belonging to all of the categories except “musicology/ethnomusicology” category as defined by the instructor in Yildiz Technical University's Audial Design program.

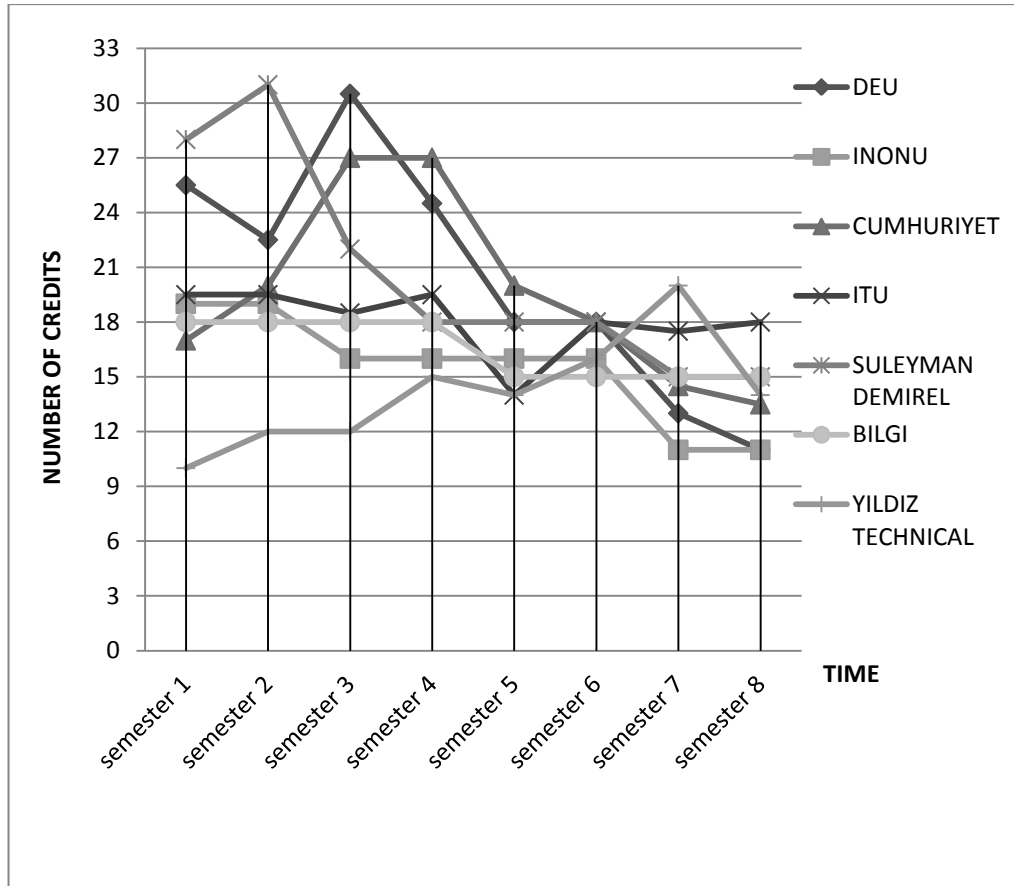


Figure 2.57 : Uniformity in credit allocations of each university per semester.

- However, each program has a different approach for distribution of these common courses they have along the four-year curriculum. For example, Inonu University has piano classes all through the four-year program where DEU has the piano for only the first four semesters. Another example is about the starting terms of the said courses. For instance, the piano course starts in the second semester in Yildiz Technical University where in all the other programs (except Bilgi University's) it starts in the first semester. Bilgi University is totally an exception in another way here. Bilgi University do not offer any performance classes in the form of the individual instrument or voice instruction, but has ensemble classes where the students can improve their improvisational skills and playing ability within a group.
- All of the programs are different from each other in terms of design of the curriculum.
- All of the fundamental music theory classes that are being taught especially in the first year of the programs are alike in terms of content and function despite the fact that their names might change from program to program. This

is an assumption made upon excluding the differences of instruction and applications among the different programs.

- Bilgi University does not offer any separate language course during the four-year curriculum for the fact that the language of instruction is English and the students attend the preparatory language program before they start their education in the music department when they are low in level in English.
- DEU and Inonu are the two institutions, which do not have any courses that might be considered as being under the category of “other.”
- All of the programs have courses belonging to all of the categories except “music business” which is taught only in Bilgi University.
- The semester YOK courses might start is subject to differences among the programs.
- DEU, Inonu and Cumhuriyet Universities do not offer any electives in their curriculums. Cumhuriyet University’s curriculum belonging to 2008-2009 has a variety of electives to choose from. Some of those electives are seen as being “*passive*” in curricula between 2009 and 2011 and with no choice to be selected as declared on the website.
- The course contents are generally not sufficient to comprehend what the course would cover.
- There are no syllabi of the courses available online with the exception of Suleyman Demirel University and some courses of Yildiz Technical University.
- The websites of the programs are contradictory between the Turkish and English version (if available).

The learning outcomes are still not declared on the websites of the seven programs, which form the subject of this stage of the study. Instead there is still the traditional understanding going on as to write the information about the courses and content in the form of learning goals which reflects the instructor based education rather than the student based one. As for music technology courses they include, it is possible to rank and list the programs as in Table 2.11.

The credit distributions per category for the whole undergraduate music technology study have differences to some extent among the universities. In terms of music technology courses included by each program, DEU music technology program has

proved to adopt the most number of music technology courses along with to be the most comprehensive curriculum among those of all the universities. It is more comprehensive in the way that it is more extended. As also stated by Isikhan (2012, p.160), some of the courses in DEU Music Technology program have been divided within themselves and new courses emerging from these divisions are included in the curriculum (e.g. Dividend course: Audio Recording; three new courses emerging from this course: Microphone techniques, Signal Processing and Routing, Editing-Mixing-Mastering) [3]. The overall percentile credit share of music technology courses within the four-year curriculum is 66.5 % (see in Figure 2.58) and is far beyond the other curriculums explored here.

Table 2.11 : Total percentage ranking in terms of ‘music technology’ category among undergraduate Music Technology programs in Turkey.

UNIVERSITY	DIVISION / PROGRAMME	MUSIC TECHNOLOGY TOTAL % CREDITS	RANK
Dokuz Eylul	Music Technology	66.5	1
Suleyman Demirel	Music/ Music Technology	40.8	2
Bilgi	Music	35.4	3
Istanbul Technical	Sound Recordings	28.5	4
Inonu	Music Technology	24.9	5
Cumhuriyet	Music Technology	24.3	6
Yildiz Technical	Audial Design	0.8	7

DEU spares 15.4 % of its whole undergraduate curriculum to music theory courses followed by 5.9 % of music history and literature courses. YOK courses are included as to have a total share of 4.9% where performance classes cover 2.9% of the four-year curriculum. By these results, it is appropriate to say that DEU approaches undergraduate music technology education as one that has its own dedicated courses and methods.

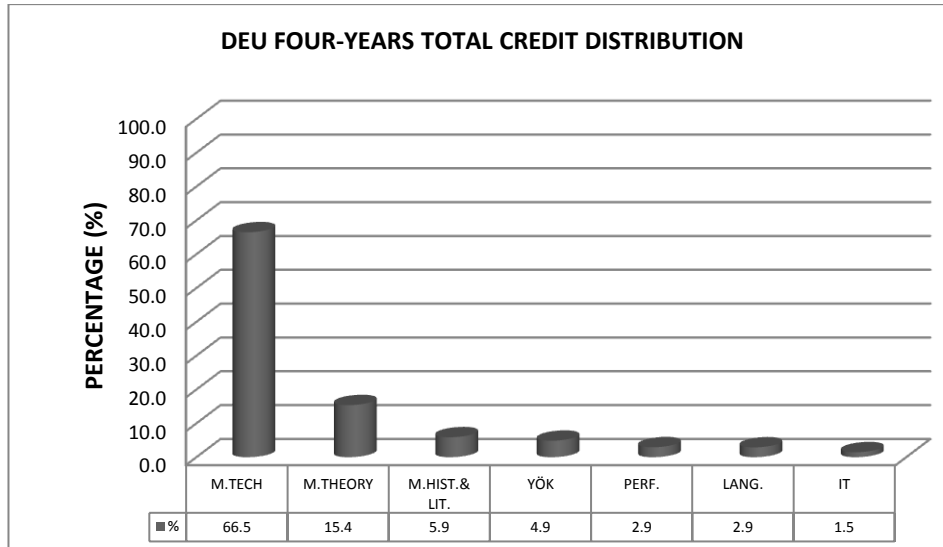


Figure 2.58 : The share of each category in percentages for DEU Music Technology Division, Four-Year Curriculum.

As shown in Figure 2.59, Suleyman Demirel University spares approximately 40.8 % of its curriculum to music technology where share of music theory courses (15.6 %) is nearly the same as Dokuz Eylul, Inonu, and Bilgi universities.

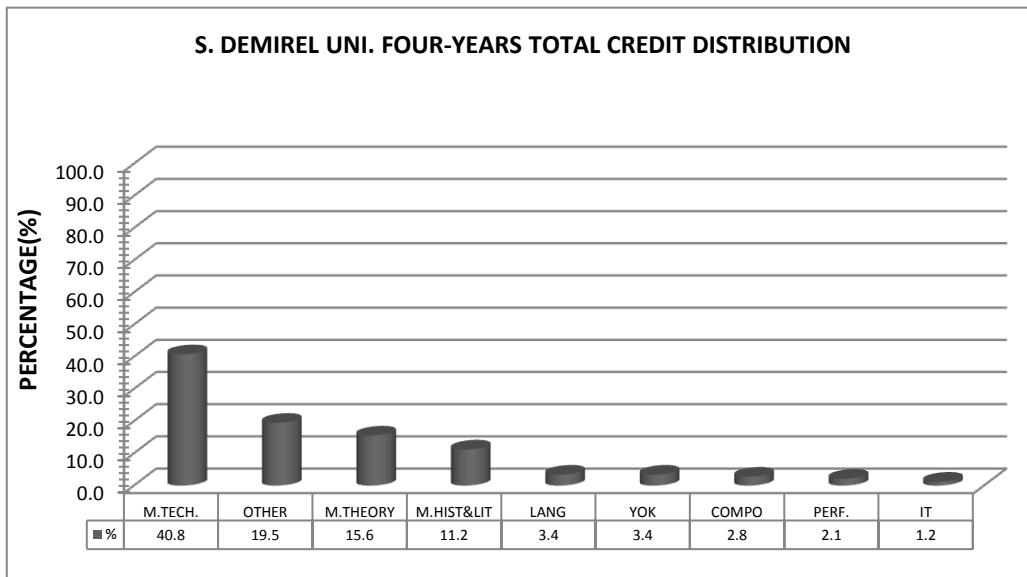


Figure 2.59 : The share of each category in percentages for Suleyman Demirel University, Music Technology Division, Four-Year Curriculum.

It is not surprising to see the amount of music history and literature spared a 11.2 % amount within a music department. This program is unique in its structure for it has spared a 19.5 % total share for the courses that was categorized as being under “other” category, which are mainly research, and project courses that are assigned credits. Suleyman Demirel University approaches music technology education in a

way that it has to offer research possibilities to the students where their research efforts are awarded with credits and are evaluated, measured and assessed.

As shown in Figure 2.60, Bilgi University spares approximately 35.4 % of its curriculum to music technology where the total percentage of share for music theory courses (16.1 %) is nearly the same as Dokuz Eylul, Inonu, and Suleyman Demirel universities.

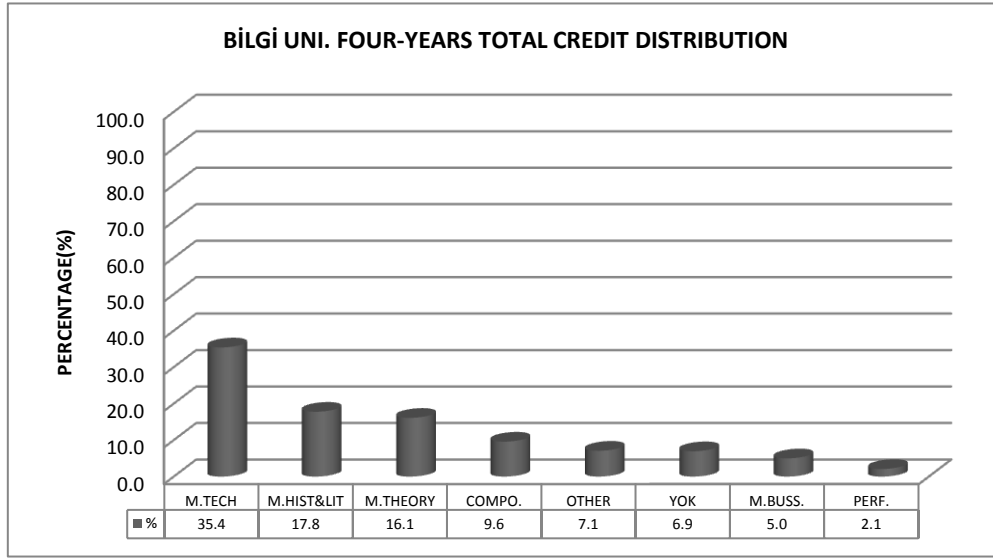


Figure 2.60 : The share of each category in percentages for Bilgi University, Music Department, Four-Year Curriculum.

Residing in Music Department the amount of music history and literature share is 17.8 %. This program is unique in its structure for it has spared a much higher 9.6 % total share for the composition courses than the other universities, which also offer composition courses, because Bilgi has employed instructors in the field of composition in 2009 and 2010. It is the only program that offers a music business course with a credit allocation of 5.0%. The program offers 2.1% performance courses in the four-year curriculum.

As shown in Figure 2.61, ITU has approximately 28.5 % of music technology credits among the overall undergraduate courses it offers in the field of music technology where it spares 38.3% of the whole curriculum to music theory. This program is also structured to have a 13.2 % total share for the courses that was categorized as being under “other” category, which are mainly elective from humanities, plus research and project courses that are all assigned credits. Performance and music history courses have shares of 2.6 % and 4.0 % respectively. I must admit I have had an expectation

before starting this research that ITU would have had more courses spared for performance, theory, and music history because the program is in the conservatory. ITU proved my prejudgment wrong in a way with the low percentile shares of performance and history courses. However, it proved me right with music theory courses being more than the music technology courses offered.

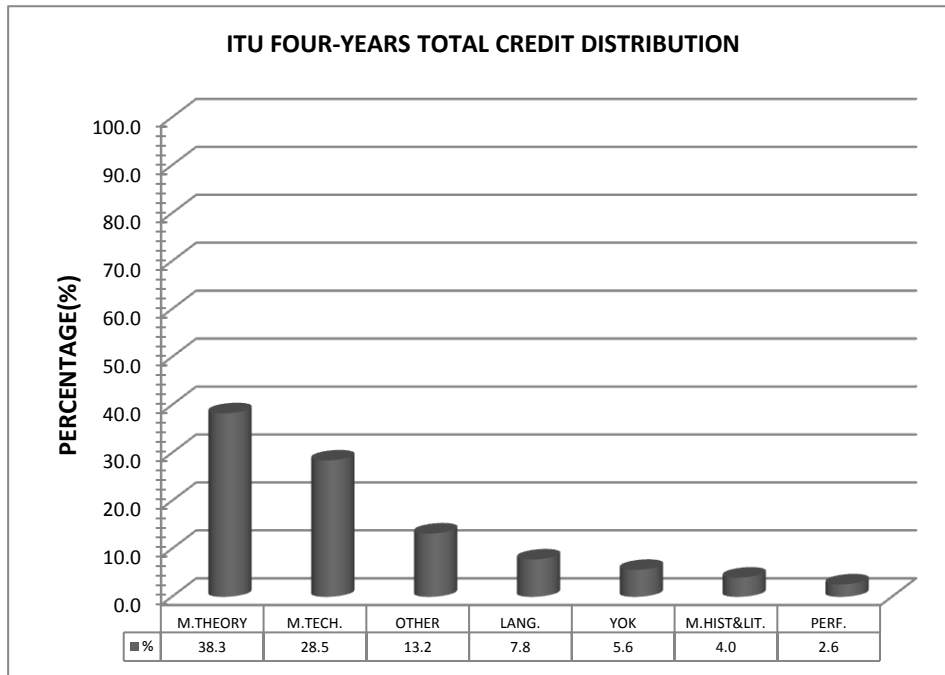


Figure 2.61 : The share of each category in percentages for ITU TMDK, Music Technology Department, Sound Recordings Division, Four-Year Curriculum.

Inonu University has more performance courses (31.8 %) than music technology courses (24.9 %) as shown in Figure 2.62. The total share of music theory courses (16.2 %) is nearly the same as Dokuz Eylul, Bilgi, and S.Demirel universities. Surprisingly, Inonu has more language courses (14.7 %) than any other program includes within its curriculum. This might well be the result of an observed need for most of the music technology terminology used –both in education and industrial practice- is in English. It also offers courses that are categorized as ‘IT’ courses within the scope of this study with a percentage of 3.9%. Looking at other departments randomly selected from the university’s website, one can see that this practice is also the same for the other departments of the university. The IT and language courses’ percentile shares being higher than the schools in the Western part of Turkey is a resemblance between Inonu and Cumhuriyet universities. It seems like there is a silent consensus of the need of the student for these courses.

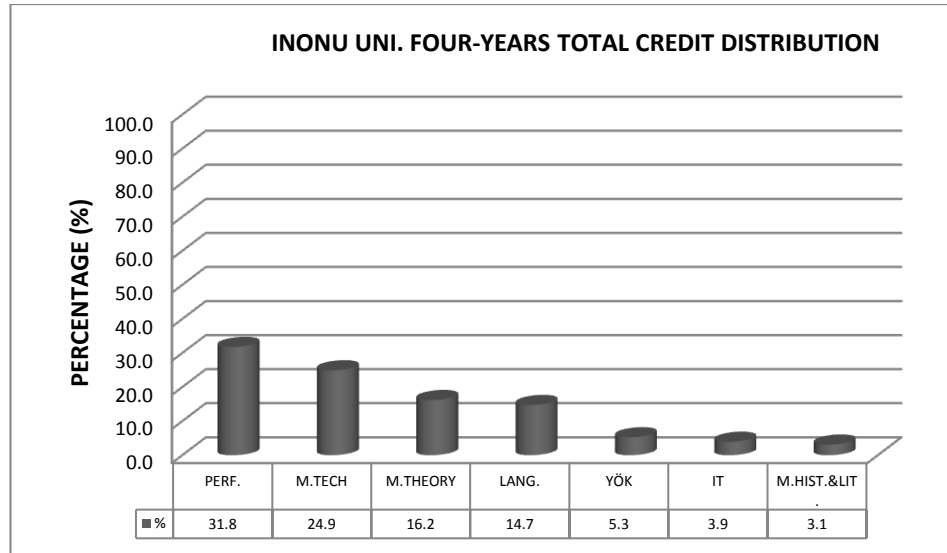


Figure 2.62 : The share of each category in percentages for Inonu Uni. Music Technology Division, Four-Year Curriculum.

Cumhuriyet University spares nearly the equal amount (24.3 %) of music technology classes like those of Inonu University. This program also has an emphasis on music theory like ITU as shown in Figure 2.63, but with a lower percentile share (28.3 %). The total amount of performance classes is 18.4%. This program has the most courses dedicated to IT classes (6.4 %).

YTU Audial Design program cannot be considered as a music technology program at all. The music technology courses have a total share of 0.8 % in four-year curriculum as shown in Figure 2.64.

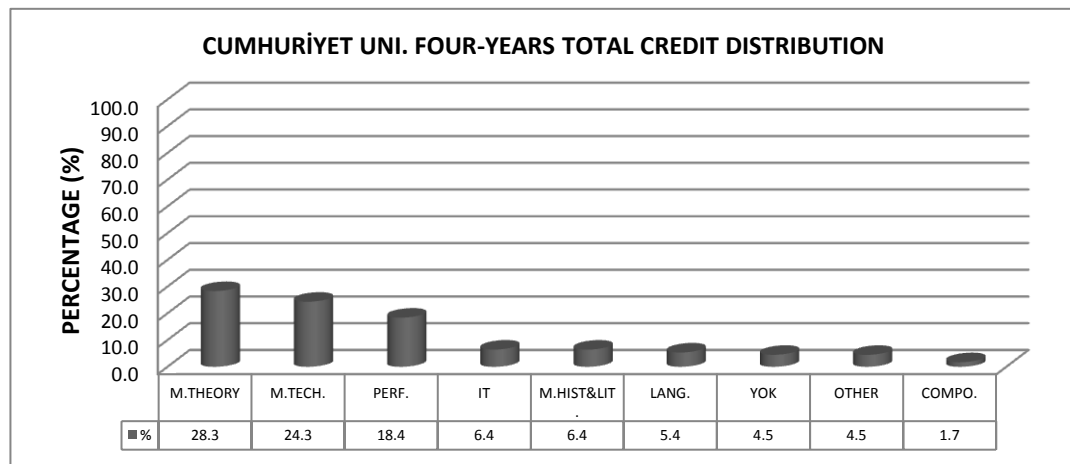


Figure 2.63 : The share of each category in percentages for Cumhuriyet Uni. Music Technology Division, Four-Year Curriculum.

The statement made about the mission of this program to raise “experts in music technologies” and is mentioned in the 2.2.1.7 of this thesis is highly questionable.

Contrary to the said statement, the program seems not adequate to raise an “expert in music technology.” One might argue that the categorization set forth by the author of this thesis is also questionable in the way that what is considered to be music technology course or not. However, reading and scanning thoroughly through the course descriptions made by the instructors of the courses given in YTU program, it can be seen that the most credits are spared to musicology / ethnomusicology courses as categorized by the instructors by themselves. I think this might put a punctuation mark on further questions. At this point in the thesis, with the findings and results arose from research, YTU Audial Design program is decided to be excluded from the following sections that most recent developments are mentioned that took place from 2012 up to current time.

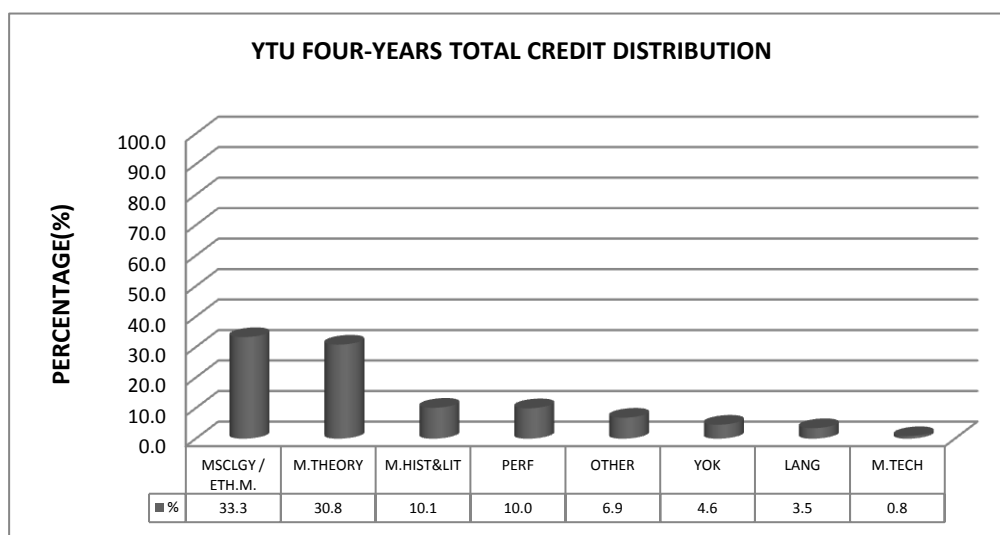


Figure 2.64 : The share of each category in percentages for YTU, Audial Design Department, Four-Year Curriculum.

2.2 Undergraduate Foreign Curriculums (2009- 2012)

In its first phase, this study has included the seven music technology programs' curricula offered by universities in Turkey and the results of the comparison made among them both on semesterly and four-year bases. As planned at the beginning, the second phase of this study delves into the similar the music technology programs abroad leading to a bachelor's degree. Because of the nature of this study, which requires a proper comparison, and also because of the differences among the higher education systems among the countries and the high diversity among the educational

programs offered, it becomes a necessity to take a look at nearly all the programs offered in the field of music technology, which offer a bachelors degree.

The same old question of what the territory of music technology still lies as a paradoxical one within the context of this study. As the main goal to achieve at the end of the study is to make an alternative four-year bachelors program in the field of music technology, the need for defining the context of the said field becomes more inevitable unless a transdisciplinary research approach is taken. Transdisciplinary research is one, which enables the researcher to go beyond a linear application of a static methodology and aim for an evolving, dynamic, or responsive methodology that is iterative and an ongoing part of the research process [17]. For example, the eleven main categories have become subject to additions made to them because of the different curriculum approaches of the foreign schools, (e.g. two additional areas, the "liberal arts" and "scientific inquiry" had to be added because of specific content requirements of New York University's Music Technology program). The obligatory changes occurring in any part of the methodology are introduced in the following chapters of the study when necessary. Since this study spanned over a more than expected time period, the methodology applied was updated, changed, and shifted towards new dimensions because of the nature of the field of study. Meeting the curricula from various universities, the final alternative curriculum, which will be offered at the end of this study, is being shaped on an ongoing basis. The goal of the study is not to draw borders around the field of music technology denoting its territories, rather accepting the very nature of the field as being interdisciplinary, multidisciplinary and/or transdisciplinary. This acceptance shapes both the research and the final outcome of it, which is the alternative bachelor's curriculum within this framework of approach, thus, leaving the epistemological and taxonomical questions out of the subject area of the study to be answered or criticized by the future readers.

2.2.1 Data selection criteria

There are many programs in different parts of the world which one might come across when researching the curricula in music technology. However, there is a high degree of variety among the name of those programs as chosen by their makers. Firstly, selecting the appropriate ones among that wide variety of foreign programs is necessary to achieve results from a comparison between them and their Turkish

counterparts. Overcoming the problem of choosing the right programs which will best fulfill the requirements of the curriculum comparisons with their Turkish counterparts is only available by delving into each one of them and looking at their statements and the learning outcomes, by looking for resemblances with Turkish universities and by picking the programs which has the name 'music technology' and/or which operate under the departments of music technology. Yet, it should not be understood, as the foreign programs that are left out of the scope of this study do not offer education in the field of music technology. Rather it should be interpreted as the left-outs are the ones which have more than enough parameters to be dealt with when attempting to draw a proper comparison framework in terms of curriculum planning and either semesterly or overall four-year allocation of the credits through the main categories of areas which were determined in the first part of this study. Also should it be noted that the area of activity of the programs selected are the ones which have a wider spectrum like the ones in Turkey rather than the ones with a narrower and specific focus.

Secondly, for the selection of the foreign music technology programs, the list of higher education programs, which has been gathered by the International Audio Engineering Society (AES), is used [18]. AES divides the world into eight regions as follows:

- Eastern Region, USA / CANADA
- Central Region, USA / CANADA
- Western Region, USA / CANADA
- Northern Region, Europe
- Central Region, Europe
- Southern Region, Europe
- Latin American Region
- International Region

Furthermore, AES organizes the types of these programs according to the types of degrees they offer into seven main categories as follows:

- Type 1 Courses: Course not normally in an accredited qualification or certificate or resulting in an in-house certificate/diploma (e.g. privately-run, non-accredited training courses; product courses)

- Type 2 Courses: Course resulting in an accredited vocational qualification or certificate
- Type 3 Courses: Associate degree course (e.g. AS)
- Type 4 Courses: Bachelors degree course (e.g. BS, BSc, BA, BMus)
- Type 5 Courses: Masters Degree course (taught) (e.g. MS, MSc, MA, MEng)
- Type 6 Courses: Research degree course (e.g. MPhil, PhD)
- Type 7 Courses: Other

Since the scope of this study involves the programs resulting in a Bachelors degree, the selection of the programs among those to take part in the study has been made from Type 4 Courses as categorized by AES. It should be noted that some of the degrees do not exist in all of the eight regions of the world (e.g. there are no Type 6 Courses in Latin American Region which result in a research degree of MPhil and/or PhD), however Type 4 Courses are hosted by every region from the AES list above. It should also be noted as a shortcoming of our programs that none of the seven bachelor's degree programs of music technology in Turkey is listed in the AES list.

The UCAS list is one of the other lists used to search the Music Technology degrees in Britain [6]. As also noted by Boehm (2007), UCAS's category of Music Technology has 351 degrees and only 131 of those actually use the word "Music Technology" in the title of their degree. There are 63 different names used in all of these degrees, which can be listed as follows with some additions to Boehm's findings about the titles of the American programs from AES list:

- Arts and Media Informatics/Music,
- Audio and Music Technology,
- Audio and Video Engineering,
- Audio Electronics,
- Audio Engineering,
- Audio Technology,
- Computational Musicology,
- Computer Science with Music (popular, digital, etc),
- Computer systems and music technology,
- Computing and Music,
- Computing with Music,

- Creative Music Technology,
- Creative Music Technology and Sound Recording,
- Digital Music,
- Electro Acoustic Composition,
- Electronic and Audio Engineering,
- Electronic music,
- Electronics with Music,
- Game Audio,
- Information Technology and Multimedia,
- Interactive Audio,
- Multi-Focus Music Technologies
- Music and Technology
- Music Composition and Technology,
- Music Engineering,
- Music Engineering Technology,
- Music Industry and Technology,
- Music Informatics,
- Music Multimedia and Electronics
- Music Recording Technology
- Music Production and Engineering
- Music Production and Technology
- Music Synthesis
- Music Technology and Innovation,
- Music Technology and/or with Audio Systems Design,
- Music Technology,
- Music Technology Software Development,
- Music Technology with Popular Music,
- Music with Computing,
- Recording Arts
- Recording Technology
- Sonic Arts,
- Sound Design Technology,

- Sound Engineering,
- Sonology,
- Tonmeister, etc...

Thirdly, the criterion of the duration of the study has been taken into consideration in limiting the scope of the study. The programs with a degree requirement of the successful completion a four-year education and thus is composed of eight semesters has been selected within the already restricted list. Because this study compares and evaluates the curricula on both a semesterly and four-year bases, it is thought that the matching of the number of educational terms is an obligation and is appropriate for this comparison to take place.

A fourth consideration is the age of the programs. It is obvious that the programs with a relatively longer history and educational tradition in the field of music technology would be of greater aid in realizing the task of creating an alternative new curriculum in terms of the experience and benefits they might offer to the comparison of the current Turkish programs to them. To gain more of this research, the selection among the foreign programs has been made taking the previous statement into account and thus in the favor of the programs with relatively a longer history in music technology education.

In the light of the criteria stated above, the curricula of the selected foreign programs have been analyzed following the same approach and methodology used in doing so with the Turkish music technology programs with some minor changes like the addition of newly met main area categories. To put it another way, the curricula of the said foreign programs were evaluated in terms of their credit allocation in the main are categories both by delving into each of the eight semesters and the overall total four-year program. The courses are separated to fall into the main categories again by a deep survey of reading all the course contents, syllabi and the learning outcomes stated by the instructors and the departments. It should be noted that the number of the main category areas are being extended along the duration of the study, where the necessity arises because of and in accordance with the different approaches of the schools to the foundation, planning, implementation, and interpretation of the curriculum. All the changes being made to the main area categories as well as to the other aspects of the study are being stated in time of their occurrence (along with the reasons to their occurrence) at the relevant sections of the

study such as interpretation and comparison of the gathered data. Thus, some of the courses offered by the Turkish programs are going to be reevaluated under some of the newly added categories (e.g. YOK classes will be examined under the area of "Liberal Arts" category) in the time of final comparison which will take place among the Turkish and foreign programs and in the following sections of this study. This is a natural result of the transdisciplinary research and there is no way to set the main area categories without surveying any course description from any of the programs. Since this is an ongoing process taking place over time, it is inevitable to make modifications on the previous data evaluation methods or some other aspects of the study on meeting new types of data which one cannot foresee before meeting them. The sheets and tables are then prepared as to include the same approach of data divisioning that (e.g. course codes, credits, percentile calculation of credit allocation, the type of the main category areas the courses fit into, total number of credits per main area and per semester etc...) was used as in the first phase of this study where the comparison among the seven bachelors degree music technology programs in Turkey took place. In short, the foreign programs that have been selected for comparison have the following properties in common:

- being offered by a university
- being a four-year program (4 year sandwich programs in Europe are accepted as well)
- leading to a bachelors degree
- having "music technology" either as a name to the program or department or as a statement about the education offered by the program
- having "English" as a language of instruction
- having published adequate data regarding the curriculum, credit hours and the content of each individual course on their website
- Being listed as a "music technology" program in at least one of AES, British Council, UCAS, UNISTAT or MEIEA lists.
- As a result of the survey among the programs, the programs that were selected which meet the requirements of the criteria above. These programs can be listed as follows:

- Birmingham City University, Faculty of Technology, Engineering & the Environment, School of Digital Media Technology, The BSc (Hons) Music Technology program, Birmingham, UK
- The University of Edinburgh, School of Arts, Culture & Environment, Department of Music, The BMus (Hons) Music Technology program, Edinburgh, UK
- Capital University, Conservatory of Music, B.M. Music Technology program, Ohio, USA
- Northeastern University, College of Arts, Media and Design, Department of Music, BS in Music Technology program, Boston, Massachusetts, USA
- New York University, Steinhardt School of Culture, Education and Human Development, Department of Music and Performing Arts Professions, Music Technology Program with B.M. in Music Technology degree offered
- University of Miami, Frost School of Music, Department of Music Media and Industry, B.S. in Music Engineering Technology

The results of the comparison based on the overall credit distribution among the curricula of the Turkish and foreign programs in the field are explained in the following chapter along with the related figures and calculations.

2.2.2 Selected foreign curricula in terms of four-year overall credit loads

2.2.2.1 New York University, Steinhardt School of Culture, Education and Human Development, Department of Music and Performing Arts Professions, Music Technology program, NY, USA

New York University offers Bachelor's degree programs in the continuously expanding field of Music Technology. Located in New York City, the capital of the music industry, Washington Square campus borders the city's Greenwich Village and Soho districts, which have long been considered the center of New York's artistic community.

The Music Technology Program prepares students for careers in Audio Mastering, Audio-Visual Production and Post Production, Multimedia, Recording Engineering, Scoring for Film and Multimedia, and Software Development. Students are allowed to develop expertise within an academic setting where learning by creative experimentation is encouraged.

To obtain a Bachelor's degree in Music Technology, a student must successfully complete 128 points, including required and elective classes. The Music Technology program at NYU was designed to offer each student a solid foundation in all areas of music

technology, while giving the flexibility to obtain specialized expertise in the area of music and audio technology of greatest interest to each student. [19]

The four-year undergraduate music technology curriculum of NYU that has been acquired from the department website [19] is presented in Table J.1. The share of each category in percentages for full curriculum is derived from Table J.1 and illustrated in Figure 2.65.

Examining Figure 2.65, which shows the overall credit distribution that takes place during the four-year study program over the main area categories, the largest share NYU dedicates belongs to the courses that are held in music technology having 43% of all the classes. This resembles the scheme of Capital, Suleyman Demirel, Bilgi and Edinburgh universities that allocate approximate shares of 41%, 40%, 35% and 50% to music technology courses respectively.

The second runner up in terms of credit weightings is the area of liberal arts holding a share of 23% among all the other categories. This is a result of the requirement that is specific to the program. Some American universities, especially the ones who offer an undergraduate Bachelor of Music (B.M) or Bachelor of Arts (B.A) degree in music technology, have a degree requirement of approximately 40 credits to be taken from the general liberal arts field during the four year study. The Bachelor of Science (B.S or B.Sc.) degrees do not have such a requirement. Since the language courses are listed under the more general category of liberal arts by the American universities, for the sake of ease in comparison, the language courses, which were more specifically categorized as being under the main, are of language studies in the first phase of this study are re-categorized as being under liberal arts.

The rest of the credits are shared among the categories of scientific inquiry, music history and literature, music business, music theory, performance and “other” category with approximate shares of 8%, 6%, 2%, 9%, 6% and 3% respectively. At a first glance, one can easily see the difference between a Turkish music technology program and NYU's as the shares allocated especially to music theory category. The Turkish programs allocate music theory approximate shares ranging from 38% to 15%, but at least a 15%. General tendency among Turkish universities is to allocate a share near the 15%-16% range to the area of music theory with the exceptions of ITU Conservatory (38%) and Cumhuriyet University (28%). This is one of the main differences which occur between the Western and relatively new Turkish

implementation of music technology curriculum in the universities of the relative regions. This difference will further be clarified when looking at the shares allocated to music theory by the other foreign universities in the upcoming sections of this study. There is clearly a need here to ask the Turkish program coordinators the reason of such an implementation regarding the high share allocated to music theory category.

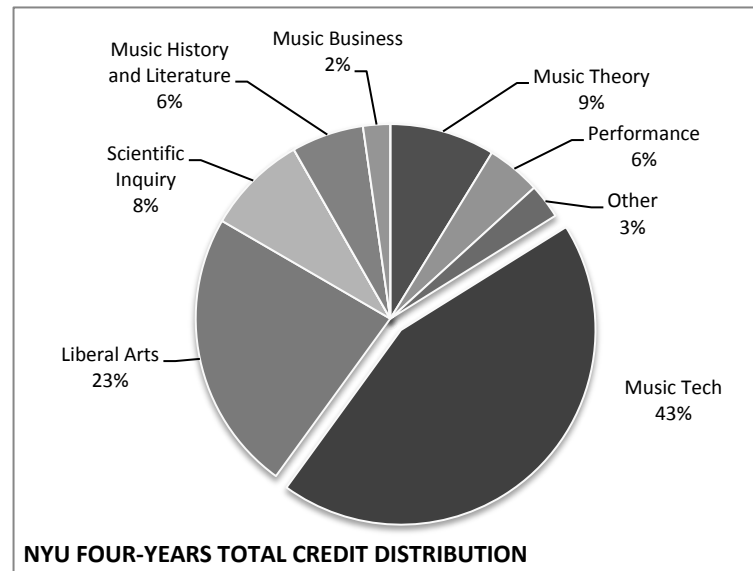


Figure 2.65 : The share of each category in percentages for NYU Music Technology Program, Four-Year Curriculum.

The scientific inquiry is a term used specifically by NYU regarding the fundamental courses in the areas of mathematics, physics and computer science. The term is found to be appropriate to be replaced as a title to the previous information technology category, which was used in the first phase of this study. Since there are no classes offered in mathematics or physics in Turkish music technology programs, the previous courses which were evaluated to be under information technology category are rearranged as to be denoted as being under the scientific inquiry and will be referred to such from this stages of the study on again for providing an accurate comparison among the categories. This is another main difference between NYU's and Turkish music technology programs and raises other questions as to why the Turkish program coordinators do not include any scientific courses within their curricula. This also is another difference, which will further be addressed when looking at the shares allocated to scientific inquiry by the other foreign universities in the upcoming sections of this study.

NYU does not offer any courses in the category of composition like Capital, Birmingham City and Miami universities and it is one of the two foreign universities in this study that offer courses that could fall under the category of "other" with an approximate total share of 3% - the second one being Northeastern university with an approximate total share of 4%.

2.2.2.2 Capital University, Conservatory of Music, Music Business and Technology Studies, B.M. in Music Technology program, Ohio, USA

The Conservatory of Music at Capital University operates through four distinct areas: Foundations, Music Business and Industry Studies, Music Education, and Performance. The Foundations Area of the Conservatory comprises courses of study that serve as a foundation to all music degree programs. These courses are designed to develop fundamental music skills and knowledge of music for all music students. These classes include studies in Music Theory, Aural Training (Audition), Literature, History, Conducting, Music Software, World Music, and Class Keyboard.

The Music Business and Industry Studies program at Capital's Conservatory of Music offers diverse degrees in the areas of Music Industry, Music Media, and Music Merchandising, and is home to Capital's renowned Music Technology degree, which utilizes state-of-the-art equipment in the Conservatory's recording studio. In addition to valuable class and studio time, each degree offered out of the Music Business and Industry Studies program boasts extensive real-world experience through professional internships in the industry and through a partnership with The Recording Workshop in Chillicothe. [20]

In the light of the above explanations published by the Capital University on their website, the music technology program leading to the 'Bachelors of Music in Music Technology' degree is selected for evaluation and is found more appropriate for the comparative goals of this study than the 'Bachelor of Arts in Professional Studies' (BAPS) degree in music technology that the same university offers is. The Bachelor of Arts in Professional Studies (BAPS) in music technology seems to have a stronger emphasis on Music Industry and Business Studies than it has in technology. The courses required to achieve a BM degree in music technology highly differ from the ones that are required to achieve a BAPS degree in music technology as shown in Table 2.12 [20].

The four-year undergraduate music technology curriculum of Capital University that has been acquired from the department website [20] is presented in Table J.2. The share of each category in percentages for full curriculum is derived from Table J.2 and illustrated in Figure 2.66.

Examining Figure 2.66, which shows the overall credit distribution that takes place during the four-year study program over the main area categories, the largest share Capital University dedicates belongs to the courses that are held in music technology having 41% of all the classes. This resembles the scheme of NYU, Suleyman Demirel, Bilgi and Edinburgh universities that allocate approximate shares of 44%, 40%, 35% and 50% to music technology courses respectively.

The second runner up in terms of credit weightings is the area of liberal arts holding a share of 23% among all the other categories. This is a result of the requirement that is specific to some American universities which offer an undergraduate Bachelor of Music (B.M) or Bachelor of Arts (B.A) degree in music technology that has a degree requirement of approximately 40 credits to be taken from the general liberal arts field during the four-year study.

Table 2.12 : The differences between two degrees of music technology offered by Capital University.

Courses specific to the degree	Courses specific to the degree
Bachelor of Music in Music Technology	Bachelor of Arts in Professional Studies - Music
Recital Attendance (7 semesters)	Recital Attendance (7 semesters)
Class Keyboard I, II, III and Competency Exam	[NOTE: B.A.P.S. students may elect to take
Jazz and Contemporary Keyboard	courses required of B.M. students]
Beginning Conducting	History and Style of Rock and Roll
Conservatory Ensembles (7 semesters)	
Private Primary Instrument Lessons (5 semesters)	Professional Studies Research Methods
Half Recital	
Music Literature I	Student Electives (21)
History of Western Art Music II	[Optional: An Arts & Science or Business Minor]
History of Jazz and Popular Music	
Musicianship/Audiation I & II	
American Popular and Jazz Theory/Lab I & II	
Student Electives (6 credits)	

The main feature of the Capital University's B.M. in music technology program that draws the greater line between itself and the rest of the foreign music technology programs that are examined in this study is that it does not offer any courses under the category of "scientific inquiry" which could be mathematics, physics and/or computer and information technology. With this feature, BM in music technology of the Capital University resembles ITU. Probably being connected to the Conservatory, this program offers the highest share of credits in "performance" category (10%) among all the other foreign universities that are selected to be in scope of this study.

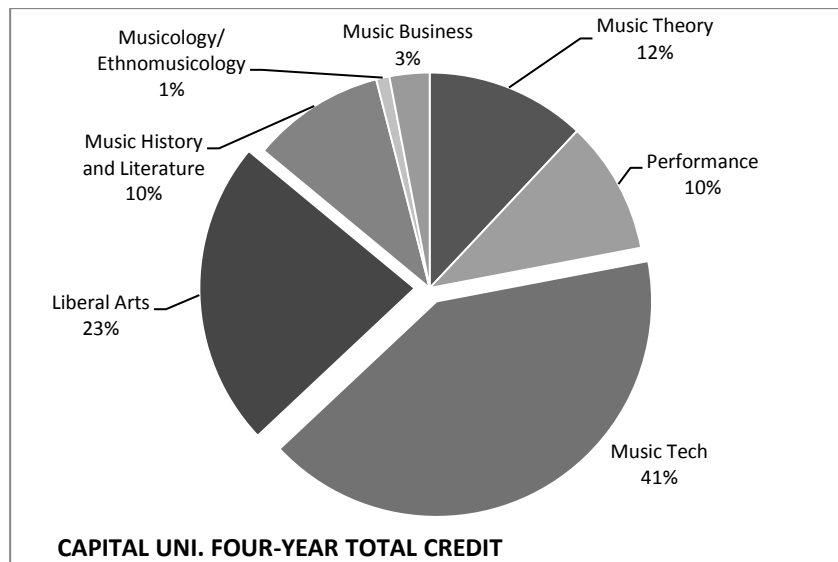


Figure 2.66 : The share of each category in percentages for Capital University Music Technology Program, Four-Year Curriculum.

The sixth semester has a total percentage of 100% shares of courses of music technology category just like the last four semesters of Dokuz Eylul University. However, only the sixth semester is separated for such an allocation policy whereas Dokuz Eylul follows the same approach all through the last two years of education just like the Birmingham City University which allocates two years of its four-year sandwich educational program 100% to music technology but one of it being work placement (paid internship).

2.2.2.3 Northeastern University, College of Arts, Media and Design, Department of Music, B.S. in Music Technology program, Boston, Massachusetts, USA

The Music Technology program at Northeastern University is a concentration in music composition. Rooted in the Western art music tradition, students study composition for both acoustic and electronic instruments and explore ways in which electronic and computer-based technologies continue to challenge and enhance our notion of music composition and performance. Creative works that focus on sound synthesis, processed recordings and/or the interaction between live instruments and electronic sounds are just some of the exciting interests that students pursue.

Students in the program learn to compose using the newest technologies and techniques, including MIDI sequencing, real-time processing, synthesis, sound design, digital audio mixing and mastering. Students also take courses in music theory, notation, history and analysis. In addition, students receive private composition lessons, in which they work one-on-one with an instructor to complete short-form compositions (private lessons require an additional fee). Students regularly have the opportunity to participate in public concerts,

where they can hear their music performed by musicians and/or presented using the program's multi-speaker sound diffusion system.

Music Technology is a selective program that combines rigorous coursework with a large number of exciting creative projects. Classes are small and students are given a significant amount of personal attention and receive considerable feedback on their artistic activities. Upon completion of the program, students should be able to compose music for a wide range of genres and settings and will be well prepared for further studies in graduate school. Music Technology students may opt to pursue a BS Combined Major in Computer Science and Music with Concentration in Music Technology or BS Combined Major in Interactive Media and Music with Concentration in Music Technology, where they are given the opportunity to combine their interest in music with other disciplines. [21]

The four-year undergraduate music technology curriculum of Northeastern University that has been acquired from the department website [21] is presented in Table J.3. The share of each category in percentages for full curriculum is derived from Table J.3 and illustrated in Figure 2.67.

Examining Figure 2.67, which shows the overall credit distribution that takes place during the four-year study program over the main area categories, the largest share Northeastern University dedicates belongs to the courses that are held in music technology having 23% of all the classes. This resembles the scheme of ITU, Inonu, Cumhuriyet and Miami universities that allocate approximate shares of 28%, 25%, 24% and 24% to music technology courses respectively. Northeastern seems to allocate the music technology courses a share of 21%- 25% each semester equally.

Northeastern University has one of the largest and most diverse spans over subjects in terms of being over the palette of main category areas with the only exception of "musicology/ ethnomusicology" area that it offers no courses in.

Like NYU and Miami universities, Northeastern offers classes in scientific inquiry with a share of approximately 9%. This is one of the differences between Northeastern and its Turkish counterparts. As stated above, Turkish universities offer classes of scientific inquiry but only in the area of computer foundations and information technology where Northeastern university has Analytical Math Level 1 and 2 and Science /Tech Level 1 classes spanning across three semesters of the overall four year study program which make up the total 9% share.

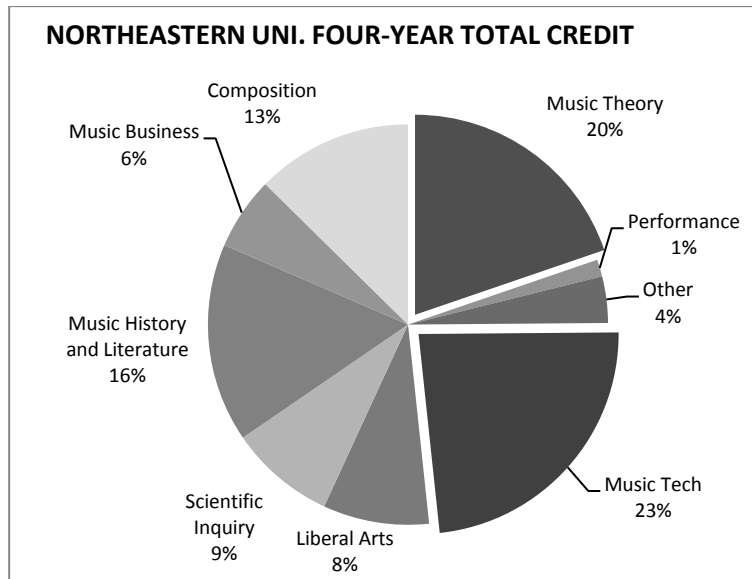


Figure 2.67 : The share of each category in percentages for Northeastern University Music Technology Program, Four-Year Curriculum.

Among the foreign universities that are examined throughout this study, Northeastern is the only university to offer an approximate share of 20% in music theory classes. With this feature of its music technology program, Northeastern resembles Bilgi University, which allocates an approximate share of 20% among the total shares of the main category areas.

Northeastern also has the most amounts of credits spared for "composition" category (with approximate share of 13%) among all the universities. The closest programs allocating similar credits for composition are Edinburgh (10 %) and Bilgi (9.5 %) universities.

As for the category of "music business," Northeastern seems to choose an allocation share of nearly half of the total credits of the eight semester (47%) to music business which makes up a 6% of the overall credits in four years time. Again, pretty close to Bilgi University, which spares 5% of its total credits to music business in the overall four-year education where none of the other music technology programs of Turkish universities seems to do so.

The credits Northeastern dedicates to "liberal arts" resembles University of Miami in amount as being 8% and 9% respectively. As mentioned before, this is a fairly similar amount to those allocated by Turkish universities because of the YOK and language courses they are obligatorily involve in their programs because of YOK regulations.

The area of "music history and literature" is one other category that makes Bilgi and Northeastern so similar in terms of credits allocated for it in respective amounts of 18% and 16% where both of the schools allocate very close amounts of credits to performance classes as well.

2.2.2.4 University of Miami, Frost School of Music, Department of Music Media and Industry, B.S. in Music Engineering Technology, Miami, USA

The University of Miami was the first university to offer a four-year undergraduate curriculum in Music Engineering Technology (MuE) culminating in a Bachelor of Music degree, and the first university to offer a two-year graduate curriculum culminating in a Master of Science degree. Today, the Music Engineering Technology (MuE) program in the Phillip and Patricia Frost School of Music ranks among the University of Miami's most prestigious programs.

After research into appropriate curricula by Ted Crager, former Associate Dean of the Frost School of Music, who determined that a minor degree in Electrical Engineering was appropriate, the undergraduate degree program was first offered in 1975. Then as now, the undergraduate program was intended for musicians who wish to pursue technology careers. The program has met NASM guidelines since its inception, and indeed set the NASM standard for music engineering technology studies. Majors are enrolled in music lessons and performing ensembles during their four-year study, complete four levels of music theory, and enroll in a strong complement of other music courses. In other words, their specialization in technology areas does not shortchange traditional music studies.

The MuE program was founded on the premise that it would teach recording technology. With the creation of many similar academic programs also focused on recording technology, and unmet strong demand for audio engineers with "harder" technology skills, the program expanded its curriculum to teach other hardware and software skills. The third program director, Ken Pohlmann, thus further emphasized studies in electrical engineering and computer science; career options as hardware and software audio engineers became available. A Master of Science degree was originated in 1986. A minor in Computer Science was added in 1997 and in 2002 this option was modified to provide a double major in Computer Science. Current degree offerings solidify the engineering content in its curriculum, while maintaining expertise in contemporary recording skills.

The University of Miami Frost School of Music offers both undergraduate and graduate degrees in Music Engineering Technology (MuE). Both degree programs were the first of their kind, setting the NASM standard for music engineering technology education.

Undergraduate Degree in Music Engineering Technology as a unique interdisciplinary program emphasizes the study of music recording, music theory and performance, digital audio, electrical engineering, and computer science. Proficiency on a musical instrument or voice is required. [22]

As stated in the above paragraphs taken as is from the school's website, the University of Miami is the first university to introduce a "music engineering technology" curriculum. With this feature of it holds this program differs from all the other programs in the way that it has specific courses, which in this study will be referred as being under the main category area of engineering.

Delving into the component courses, which are offered by the department, it can be seen that some of the courses as "Electrical Circuit Theory," "Logic Design", "Microprocessor", "Transducer Theory", "Structured Digital Design" and the like are different from any other program that is evaluated and compared within the scope of this study. Even the computer classes offered within this particular program are far more advanced and beyond by content (they are subjects of "computer and software engineering" in content and context) than the fundamental introductory computer courses of any other program listed in this study. Since these are the circumstances, the advanced computer programming and software design courses are counted as to fall in the category of engineering rather than scientific inquiry in this specific particular case of the University of Miami.

The four-year undergraduate music engineering technology curriculum of the University of Miami that has been acquired from the department website [22] is presented in Table J.4. The share of each category in percentages for full curriculum is derived from Table J.4 and illustrated in Figure 2.68.

Looking at Figure 2.68 the clear and equal allocation of credits over the category areas of engineering (23%) and music technology (24%) can easily be noticed. When these areas are added together along with the scientific inquiry share (8%), they form more than half of the overall undergraduate study as being highly technical and technological part of the program. Even so, the share dedicated to the performance category in terms of credit weighting distribution is 20%, where Northeastern allocates the same amount for "music theory," denoting that this program gives special emphasis on "performance" among other areas than "music technology" and "engineering." The credits made shared among "music business", "music history and literature" and "music theory" is nearly evenly distributed as each of them being around 5%. With what is mentioned above in mind, Miami stands distinct among the other universities.

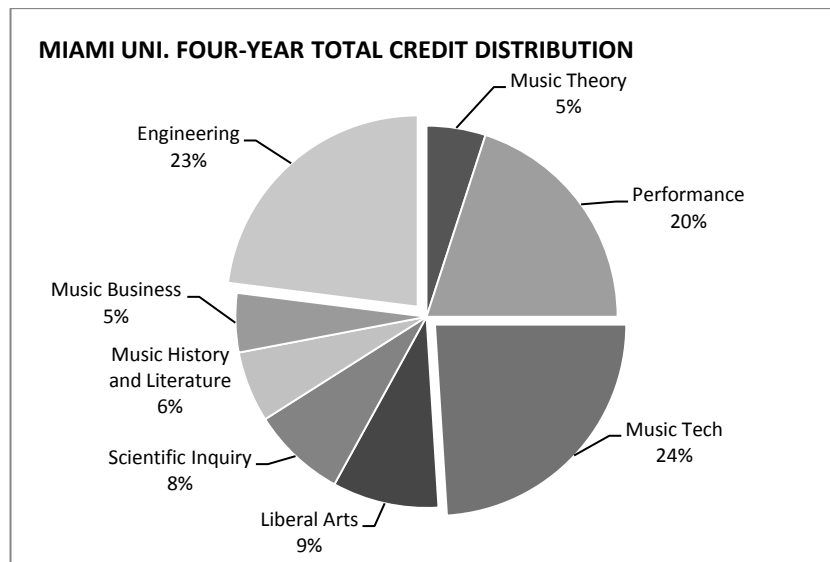


Figure 2.68 : The share of each category in percentages for University of Miami Music Engineering Technology Program, Four-Year Curriculum.

2.2.2.5 Birmingham City University, Faculty of Technology, Engineering & the Environment, School of Digital Media Technology, The B.Sc. Music Technology Program, Birmingham, UK

The BSc. in Music Technology study programme is aimed at creating multi-skilled and versatile graduates who can use technology to create, perform and distribute music, as well understand the underlying principles that are needed to make informed decisions about technologies.

Graduates will be fully prepared for employment in this dynamic sector. They will have a firm scientific understanding of the technology employed in this fast-evolving business and an understanding of business principles that will inform and augment their creative abilities and practical skills in music production. This course is accredited by the Institute of Engineering and Technology (IET). The course has evolved through consultation with all stakeholders, which comprise academics, students, employers and alumni. There are various opportunities for students to link up with industry professionals throughout the course.

The BSc. in Music Technology course is run jointly by the University's Technology, Engineering and the Environment Faculty and Birmingham Conservatoire; you will study in both faculties. The course is unique in that it combines the skills and expertise of a leading technology institution and a premiere UK Conservatoire. The course holds a distinctive place in higher education because it combines a significant grounding in technology with the musical accolades associated with a Conservatoire education. The programme draws upon a wide range of academic disciplines, such as technology, sound recording, music and critical studies and business. To prepare graduates for work in an expanding creative industry sector, the course focuses on developing creative abilities in tandem with practical and technical skills in music production, utilizing professional

hardware and software systems. The aims of the programme are to offer a broad-based and stimulating curriculum that combines a study of technology with creative and production processes, as well as business skills that are relevant to the music and audio industry. Students will be challenged intellectually and creatively through the application of technical knowledge and practical skills associated with audio systems and music production to the creation of high quality audio related products. They will also develop transferable and marketable skills that are key to a successful career within the music and associated industries, while being aware of the legal and ethical issues that are pertinent to them. We offer an enjoyable and rewarding educational experience, which involves the students actively participating in a wide range of active teaching and learning approaches. [23]

The four-year undergraduate music technology curriculum of Birmingham City University that has been acquired from the department website [23] is presented in Table J.5. The share of each category in percentages for full curriculum is derived from Table J.5 and illustrated in Figure 2.69.

Looking at Figure 2.69, the first thing that catches the eye is the most of the credits of the overall program being spared for music technology with an approximate percentage share of 75%. This is the greatest amount that is shared for music technology among all the other universities -both foreign and Turkish- that is under the scope of this study. The second university separating the most amounts of credits for music technology in its four-year curriculum is Dokuz Eylul with an approximate overall share amount of 66% of all credits. One year of Birmingham City University's program is composed only of "work placement" which aims the student to work as a professional in the field and earn adequate hands-on practice and vocational experience while contributing the university to maintain its relationships with the industry to enable its students to be in an advantageous position as job seekers after graduation.

Most of the British schools give bachelor degrees in music technology in 3 years + 1 work placement year. Students are encouraged to take that year most generally at the 3rd year of their studies, and since the work placement year falls in between two years of education at the university, this type of educational duration is referred as a 'sandwich'.

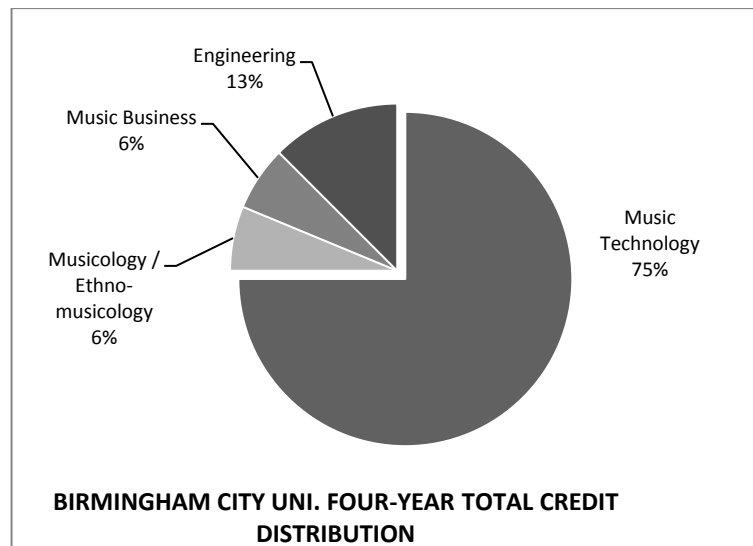


Figure 2.69 : The share of each category in percentages for Birmingham City University Music Technology Program, Four-Year Curriculum.

This particular program of Birmingham City University's includes *advanced* computer classes from "computer engineering," thus these classes that form 13% of all the classes offered in the curriculum are categorized under the area of "engineering" rather than in the "scientific inquiry." The rest of all the classes are formed of the areas "music business" and "musicology / ethnomusicology", each of them having an approximate share of 6% of all the courses offered within the four year sandwich undergraduate program.

Birmingham City University's B.Sc. in music technology program is the least diverse program in terms of the main area categories it includes. It offers courses from only four categories as explained above and contains no classes in music theory, performance, composition, music history and literature, scientific inquiry, liberal arts or others categories.

2.2.2.6 The University of Edinburgh, School of Arts, Culture & Environment, Department of Music, The B.Mus. Music Technology program, Edinburgh, UK

The single honors degree in Music Technology combines core knowledge in a wide and complementary range of musical and scientific disciplines with the possibility to specialize in one or more areas of individual interest. The courses in Music Technology, which form the basic thread of the degree through all years, offer practical experience in bringing these varied disciplines together in a creative context. The BMus Music Technology degrees are not just training courses in sound production and recording. They are designed to give a broad, general background to music technology, to stimulate creativity and to confront issues of art and technology in uncompromising ways. At the same time the core

knowledge is intended to lay a foundation for many careers, including personal creative activity, and Edinburgh graduates have a good track record at finding employment in the recording, broadcast media and commercial music industries, as well as pursuing careers as artists, teachers and programmers.

First and second year subjects are examined by submissions and by written and practical examinations. Students are required to take courses amounting to 120 credits in each year. Courses lasting four or more years are awarded an Honors degree, while courses lasting three years receive an Ordinary degree. Students are again required to take courses amounting to 120 credits in both the third and fourth year. [24]

The four-year undergraduate music technology curriculum of the University of Edinburgh that has been acquired from the department website [24] is presented in Table J.6. The share of each category in percentages for full curriculum is derived from Table J.6 and illustrated in Figure 2.70.

As shown in Figure 2.70, the distribution over the main categories of areas that BMus in Music Technology program of Edinburgh University offers can be listed as follows:

- Music technology courses 50%
- Musicology / ethnomusicology 12 %
- Music theory courses 10%
- Composition courses 10%
- Scientific inquiry 9%
- Engineering 5 %
- Music history & literature course 4 % and
- No courses in "liberal arts," "music business", "performance" and "other" categories.

Edinburgh University has the only foreign program that has no music business courses like the programs in Turkey. It is the program, which allocates the biggest amount of credits to "musicology/ethnomusicology" category among all the universities that are examined within the scope of this study. In addition, it is the only BMus program that do not offer any courses in "liberal arts" category.

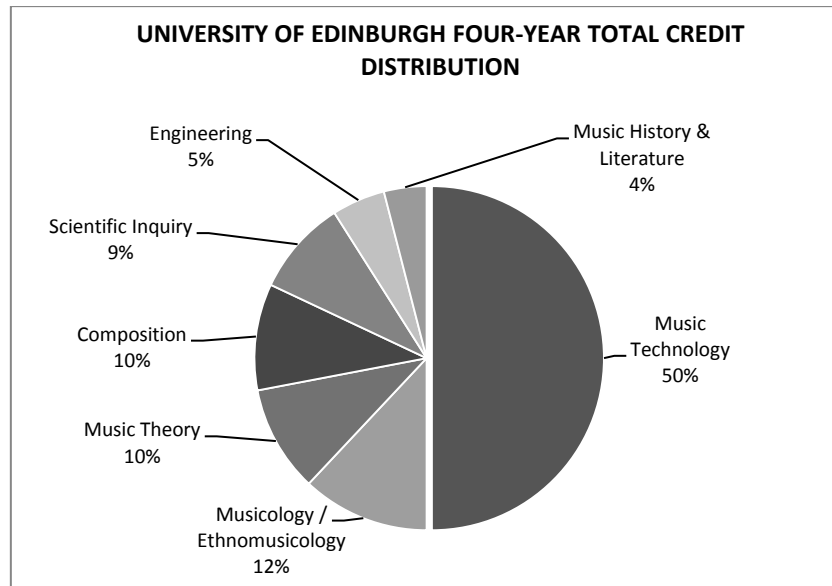


Figure 2.70 : The share of each category in percentages for University of Edinburgh, Music Technology Program, Four-Year Curriculum.

2.3 Findings Regarding Overall Comparison Between Turkish and Foreign Curriculums (2009-2012)

The findings that have been met until this time of the study are described in this section. The schools can be ranked from most to least in terms of “total number of credits” offered in the overall four year curriculum as follows:

- | | |
|--------------------------------|---------------|
| 1. Suleyman Demirel University | 165 credits |
| 2. Dokuz Eylul University | 163 credits |
| 3. Cumhuriyet University | 157 credits |
| 4. ITU | 142,5 credits |
| 5. Northeastern Uni. | 138 credits |
| 6. Miami Uni. | 136 credits |
| 7. Bilgi University | 132 credits |
| 8. Capital Uni. | 131.5 credits |
| 9. NYU | 128 credits |
| 10. Inonu University | 124 credits |

Both Birmingham City and Edinburgh universities offer a standard of 120 credits per year but the credit hours are subject to a different way of calculation in Britain. Therefore, they are left out from the rankings.

The foreign programs are mostly closer to each other than Turkish programs are in terms of total number of credits offered and this also applies to “term credits.” (USA: 128- 138 range, Britain: 120 ECTS per year straight, Turkey: 124 – 165 range)

The elaborated six Turkish and six foreign programs differ from each other in credit allocation both on termly and overall levels.

All of the Turkish music tech programs have classes belonging to the categories of performance, music theory, music history & literature, music technology and liberal arts (because of YOK classes) where foreign programs do not (no performance in Edinburgh for example).

The foreign universities offer Music Technology degrees in a wide range of titles and by dividing the music tech. degree in a number of ways:

According to the type of bachelor’s degree (B.M., B.S., B.A., B.A.P.S. etc...) or to the type of concentration or emphasis. For example, a school might house two types of Music Technology degrees as in the example of Capital University: B.M. - Music Technology and B.A. Professional Studies - Music Technology.

The Courses common to both the B.M. and B.A.P.S. degrees are listed in the department's website [25].

The Turkish universities do not house types of degrees of music technology programs. Each Turkish university inspected within the framework of this study has one Music technology program with exception of ITU housing Sound Recordings and Çalgı Yapımı under the department of Music Technologies. Range of titles indicate the maturity in education in the field of music technology and its usage for the sake of clarity in the type of specialized education in the sub-areas of the broader music technology.

General tendency among Turkish universities is to allocate a share near the 15%-16% range to the area of music theory with the exceptions of ITU Conservatory (38%) and Cumhuriyet University (28%).

General tendency among foreign universities is to allocate a share near the 9%-10% range to the area of music theory with the exceptions of Northeastern Uni.(20%), Miami Uni. (5%) and Birmingham City University (0%).

General tendency among Turkish universities is to allocate a share near the 1%-6% range to the area of scientific inquiry -but only IT classes- with the exceptions of Bilgi(0%) and ITU(0%)

General tendency among foreign universities is to allocate a share near the 8%-9% range to the area of scientific inquiry with the exceptions of Capital Uni.(0%), and Birmingham City University (0%). Turkish universities have no fundamental Math or Physics classes under this category.

General tendency among ALL universities is to allocate a share near the 1%-13% range to the area of Liberal Arts with the exceptions of Inonu(20%), NYU (23%), Capital (23%), Birmingham City(0%) and Edinburgh (0%) .

Nearly all Turkish universities introduce Liberal Arts and Scientific Inquiry classes in the first two semesters of the four-year plan. The foreign ones offer these classes spread through all semesters the four-year curricula.

General tendency among foreign universities is to allocate a share near the 2%-6% range to the area of Music Business with the exceptions of Edinburgh Uni. (0%) .

Among Turkish universities, only Bilgi University offers classes in music business with an overall share of 5% in four years. The others do not host any Music business courses.

All of the programs are different from each other in terms of naming the courses in the curriculum.

All of the fundamental music theory classes that are being taught especially in the first year of the programs are alike in terms of content and function despite the fact that their names might change among programs. This is an assumption made upon excluding the differences of instruction and applications among the different programs.

DEU, Inonu and Cumhuriyet Universities do not offer any electives (indicator for the room for the student to structure his own education).

The foreign universities ALL require electives in different amounts per semester.

The course contents of Turkish universities –if published- are generally not sufficient to comprehend what the course would cover. All the course contents are sufficiently published by foreign universities.

There are no syllabi of the courses available online with the exception of Suleyman Demirel University.

The learning outcomes were still not declared on the websites of Turkish programs. Instead there is still the traditional understanding going on as to write the information about the courses and content in the form of learning goals which reflects the instructor based education rather than the student based one. Learning outcomes were not available in the case of foreign universities as well.

2.4 Changes in the Curriculums After 2012

Recent changes in the music technology curriculums offered by the universities are described in this chapter. Some aspects of the curriculums have remained intact whereas some of them have been subject to change. The goal of this chapter is to keep the information from the previous chapters updated because the lifetime of this study has spanned over more years than previously planned. The methods in data collection, calculation and result derivation are performed in the same way in order to keep the consistency.

The data is gathered through internet survey through the related web pages of the music technology programs. Many of the websites have changed in structure, content and design as well as their URLs. The new URLs regarding the recent curriculums are given in references section. The list of the programs that have been examined in terms of changes occurred after 2012 are as follows:

- Dokuz Eylul University, Faculty of Fine Arts, Department of Musicology (or Musical Sciences), Music Technology curriculum [26] ,
- Bilgi University, Department of Music, Music curriculum [27],
- Istanbul Technical University, State Conservatory of Turkish Music, Department of Music Technology, Sound Recordings curriculum [28],
- Inonu University, Faculty of Fine Arts and Design, Department of Music, Music Technology curriculum [29],

- Cumhuriyet University, Faculty of Fine Arts, Music Technology curriculum [30],
- New York University, Steinhardt School of Culture, Education and Human Development, Department of Music and Performing Arts Professions, Music Technology curriculum [31],
- Capital University, Conservatory of Music, Music Business and Technology Studies, B.M. in Music Technology curriculum [32],
- Northeastern University, College of Arts, Media and Design, Department of Music, B.S. in Music Technology curriculum [33],
- University of Miami, Frost School of Music, Department of Music Media and Industry, B.S. in Music Engineering Technology curriculum [34],
- Birmingham City University, Faculty of Technology, Engineering & the Environment, School of Digital Media Technology, The B.Sc. Music Technology curriculum [35],
- The University of Edinburgh, School of Arts, Culture & Environment, Department of Music, The B.Mus. Music Technology curriculum [36],

Suleyman Demirel University music technology program that has been discontinued after 2011 and YTU audial design program, which dedicated the total amount of 0.8% to music technology courses within its four-year curriculum have been excluded for further exploration in this section.

DEU Music Technology Division has changed its curriculum in 2012 both by structure and content, as stated by Isikhan (2012). The changes can be elaborated in three groups: a) courses that are kept, b) brand new courses (like sound design, popular music design) and courses originated from the previous course “recording techniques,” c) courses that are not offered anymore. The “a” group courses has been kept as is since the music technology program started to be offered. These courses are mainly related to the usage of studio like studio practices. The “b” group courses might either originate from the requirements that the technological progress, industrial needs, human resources of the program, the changes in student profile or from “recording techniques” course as Isikhan (2012) states. The courses “microphone techniques”, “signal flow” and “editing, mixing and mastering” are the new courses that originated from “recording techniques” and are included in the recent curriculum by DEU. Hence, “recording techniques” is an example to “c”

group courses which have been totally discontinued to be offered because they have been broken into new and content that is more specific. Another subcategory of the courses within “c” group courses are the ones that are not offered anymore because of the lack of need in current circumstances. Isikhan (2012) explains their approach of decision making between compulsory and elective courses as being “long discussions over a long period of time.” According to his explanation, the department board has made the distinction between compulsory and elective courses by taking the history and future of music technology into account. Their final decision is in the way that music technology is a discipline, which has its roots in “tonmeistering,” and “tonmeistering” has its roots in the “studio,” so the compulsory courses should be the ones about “studio tonmeistering.” The elective courses are the ones which are thought as being “indirectly about” tonmeistering like “concert sound systems”, “sound technology”, “sound design and surround sound” and “popular music design” [3].

With the changes that took part in DEU music technology curriculum after 2012, the credit allocations have also changed among the course categories as shown with Table 2.13.

Table 2.13 : The allocated credits as percentages per course category before and after 2012, DEU Music Technology Curriculum.

DEU, Music Technology Curriculum			
COURSE CATEGORY	ALLOCATION BEFORE 2012 (%)	ALLOCATION AFTER 2012 (%)	AMOUNT OF CHANGE (%)
Music Tech.	66.5	56.5	-10
Music Theory	15.4	16.1	0.7
Music History and Literature	5.9	8.9	3
Performance	2.9	7.5	4.6
YÖK	4.9	4.5	-0.4
Language	2.9	2.2	-0.7
Information Tech.	1.5	0	-1.5
Other	0	4.3	4.3

Music technology category has dropped by 10 % in the overall four-year program where courses of music history and literature as well as performance category

courses have raised by 3% and 4.6% respectively. Another raising category in terms of allocated percentage of credits among total credit load is the general electives (represented in the table as “other”) category that has been raised by 4.3%. The rest of the course categories have not been changed with significant amounts where each has been changed by amounts under 2%.

The changes in allocations per category that took place before and after 2012 are represented as curves for easy comparison in Figure 2.71. In this type of line charts, the more intersecting the points on the curves are, the least amount of change is indicated between the compared parameters. As represented in the figure, the consistency between the curves denoting allocations per categories before and after 2012 can easily be observed. DEU seems to keep most of the allocations nearly intact with the exceptions of the changes observed in music technology, music history & literature and performance category courses and the general electives represented by “other” category here.

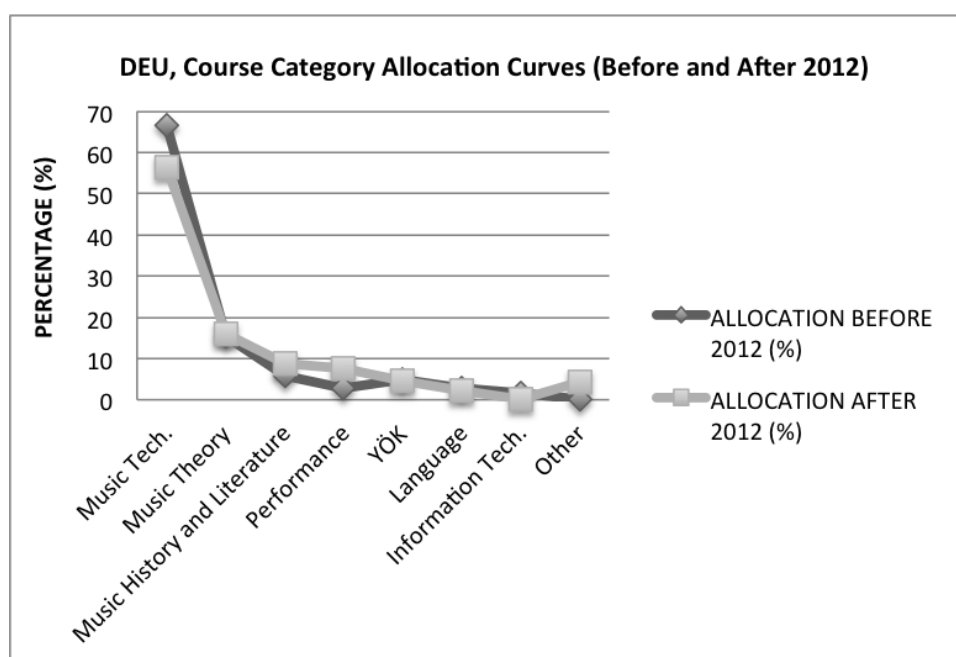


Figure 2.71 : DEU, Course Category Allocation Curves (Before and After 2012).

Bilgi University Music curriculum, on the other hand, seems to undergo significant amount of changes in the whole four-year curriculum. The shift arose from the specialty of new academic staff employed as well as the recent decisions taken by the university administration. After the university administration has changed as a whole in 2009, the department heads and the deans have also changed in many faculties and

departments on the following two years. The changes in academic staff continued until 2011 when the new Santral campus has been opened. Since 2011, the academic staff seems to be somewhat more stabilized, although changes in educational system still continue. These changes occur mainly because of the goal of achieving accreditations from both an USA and Europe agencies with contradicting requirements due to the differences in educational systems implemented in USA and Europe.

The changes between the total percentage allocation between years before and after 2012 are shown in Table 2.14 for Bilgi University music curriculum. As can be seen in the given table, the amounts of music theory, language, performance and composition courses have been raised approximately by 9.9%, 4%, 2.9% and 2.4% respectively. Music technology category has been dropped radically approximately by 9.4%, where music history & literature and music business courses have been decreased by the respective approximate amounts of 6.8% and 2%.

Table 2.14 : The allocated credits as percentages per course category before and after 2012, Bilgi University Music Curriculum.

Bilgi Uni. Music Curriculum			
COURSE CATEGORY	ALLOCATION BEFORE 2012 (%)	ALLOCATION AFTER 2012(%)	AMOUNT OF CHANGE (%)
Music Tech.	35.4	26	-9.4
Music Theory	16.1	26	9.9
Music History and Literature	17.8	11	-6.8
Composition	9.6	12	2.4
Other	7.1	7	-0.1
YÖK	6.9	6	-0.9
Music Business	5	3	-2
Performance	2.1	5	2.9
Language	0	4	4

The changes in the allocation of categories for Bilgi University music curriculum before and after 2012 are also represented with a line chart in Figure 2.72. As can be interpreted from the line chart, the allocation curves differ mostly at points where the

allocations for music technology, music theory, music history & literature and language courses are indicated. Such an indication shows that the mostly changed amounts of courses belong to the mentioned course categories where the rest of the courses have not been subject to changes that occurred equal and below 2%.

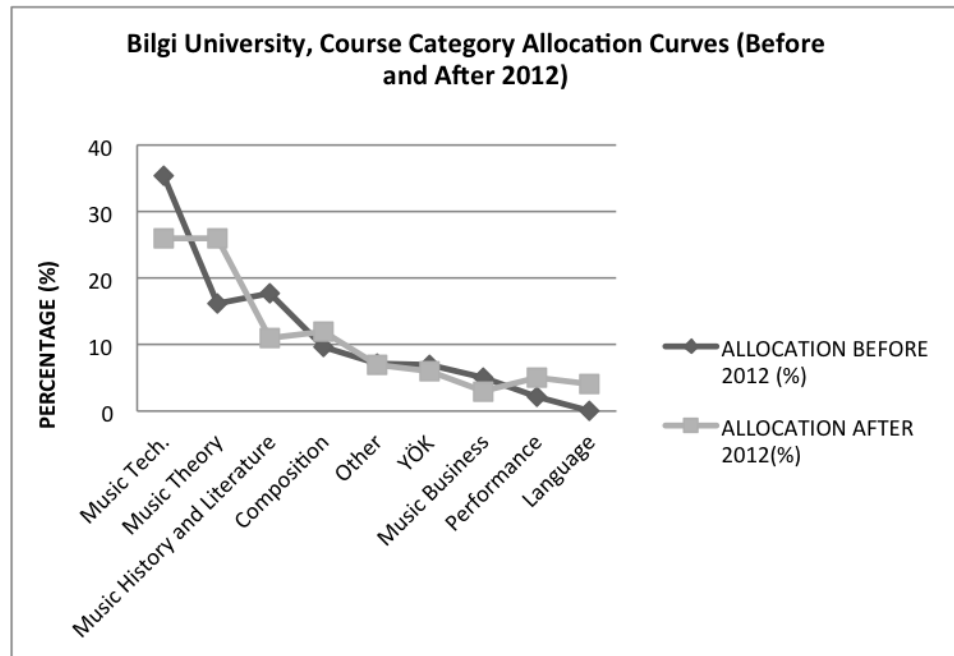


Figure 2.72 : Bilgi University, Course Category Allocation Curves (Before and After 2012).

Most recent development pushed by the university board of trustees is the raise in the amount of general electives versus departmental core and elective courses. The board of trustees seems to be willing to alter the educational system towards a more “modular” one where the student is given the chance to receive a broader field of instruction. This change as not been implemented yet as it has, been fully accepted by the academic staff and it has still been being discussed as of 2014. All of these administrative changes have been reflected on music curriculum although intentionally “seemingly” in an indirect manner. With the changing of departmental administration and newly recruited academic staff with a music theory and composition background, the music curriculum has been continuously changed each academic year by changing courses offered little at a time.

ITU Sound Recordings Division has realized the most significant change in its curriculum with a radical upward shift in music technology courses that equals to a 25% of the overall credit allocation. Before 2012, the division used to allocate only 28.5% of the whole curriculum to music technology courses where the total amount

of music theory courses was 38.3% as shown in Table 2.15. Although there is neither a unique approach, consensus nor a joint study that specifies how much of a curriculum should be allocated to the course category that gives the offering department its name, ITU Sound Recordings curriculum used to catch attention that it has spared more of its curriculum to music theory than to music technology. The recruited and promoted academic teaching staff seems to lead to the raise in the amount of music technology courses offered. This suggests how curriculum is tightly related to the resources of the departments in the universities.

Table 2.15 : The allocated credits as percentages per course category before and after 2012, ITU Sound Recordings Curriculum.

ITU, Sound Recordings Curriculum			
COURSE CATEGORY	ALLOCATION BEFORE 2012 (%)	ALLOCATION AFTER 2012(%)	AMOUNT OF CHANGE (%)
Music Tech.	28.5	53.5	25
Music Theory	38.3	20.7	-17.6
Other	13.2	9.3	-3.9
Language	7.8	7.8	0
YÖK	5.6	5.3	-0.3
Music History and Literature	4	0	-4
Performance	2.6	2.6	0
Information Tech.	0	0.8	0.8

The changes in allocations per category that took place before and after 2012 are presented as curves for easy comparison in Figure 2.73. As represented in the figure, the resemblances and differences between the curves denoting allocations per categories before and after 2012 can be observed. The line chart indicates the upward shift in amount of music technology courses offered was balanced by the downward shift in the courses offered in the categories of music theory, music history & literature and the electives that fall under the ‘other’ category. Language, YÖK, performance and IT category courses are either remaining intact or do not represent a significant amount of change.

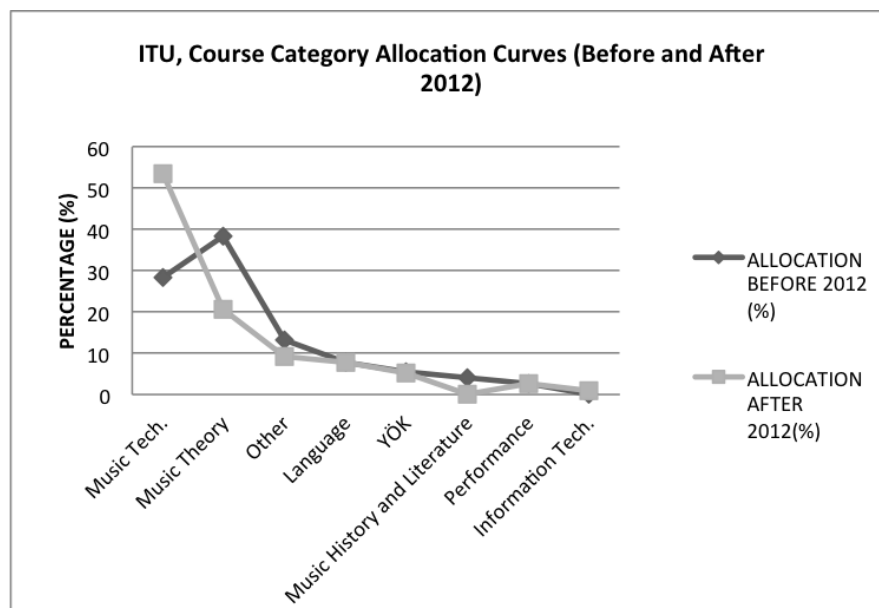


Figure 2.73 : ITU, Course Category Allocation Curves (Before and After 2012).

The individual percentages per categories of Inonu University music technology curriculum are given in Table 2.16.

Table 2.16 : The allocated credits as percentages per course category before and after 2012, Inonu University Music Technology Curriculum.

Inonu Uni. Music Technology Curriculum			
COURSE CATEGORY	ALLOCATION BEFORE 2012 (%)	ALLOCATION AFTER 2012(%)	AMOUNT OF CHANGE (%)
Music Tech.	24.9	37	12.1
Performance	31.8	22	-9.8
Music Theory	16.2	17	0.8
Language	14.7	7	-7.7
YÖK	5.4	6	0.6
Information Tech.	3.9	4	0.1
Other	0	6	6
Music History and Literature	3.1	1	-2.1

The most changed category is music technology with an upward shift by 12.1% followed by performance category that has been subject to a downward shift of 9.8%.

Language category follows the previous two categories in the most changed list with a decreased amount of 7.7%. Before 2012, Inonu University has not been offering

any compulsory or elective course that would fall under the category of “other.” After 2012, Inonu University started to introduce general elective courses like “Basketball,” “Table Tennis,” “Aerobics,” “Swimming”, “Marbling Art”, “Fundamental Education in Ceramic Art”, “Plastic Arts, etc. With the introduction of these new general electives into the music technology curriculum, the previously non-existent category has been allocated 6% of the four-year education. The rest of the courses represent small amounts of change (less than 2%) with the exception of music history and literature courses that were reduced by 3%. The changes that took effect after 2012 in Inonu University Music Technology Curriculum are also represented as a line chart with Figure 2.74.

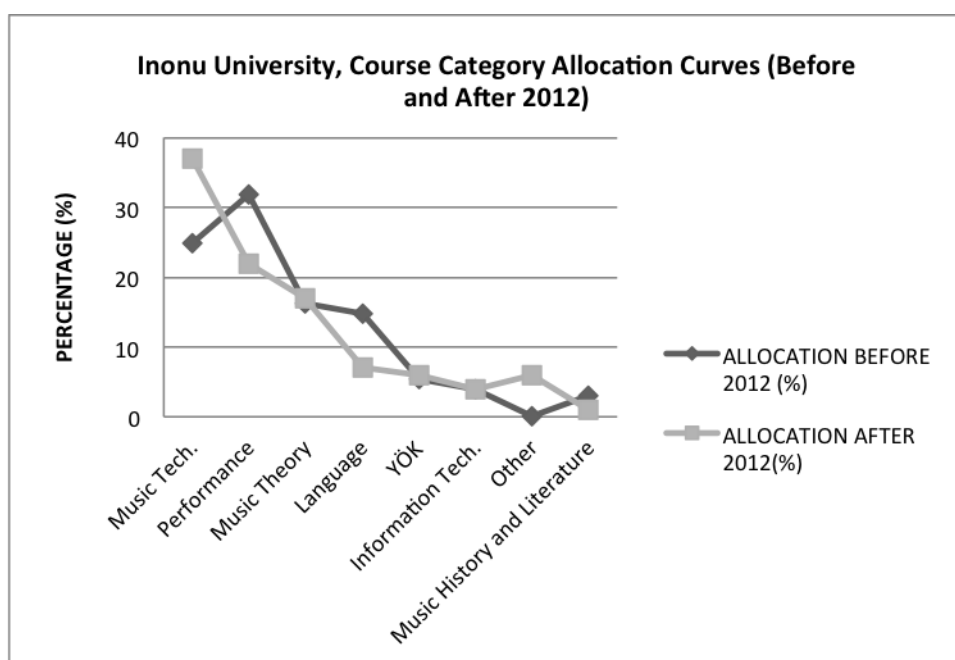


Figure 2.74 : Inonu University, Course Category Allocation Curves (Before and After 2012).

Cumhuriyet University music technology curriculum represents changes before and after 2012 similar to those of Inonu University, music technology program in terms of the raised amount of music technology courses and lowered amount of music theory courses. Music technology courses have been subject to an approximate upward shift by 13% where music theory courses have been approximately decreased by 10 % as can be deduced from the numbers given in Table 2.17.

Table 2.17 : The allocated credits as percentages per course category before and after 2012, Cumhuriyet University Music Technology Curriculum.

Cumhuriyet Uni. Music Technology Curriculum			
COURSE CATEGORY	ALLOCATION BEFORE 2012 (%)	ALLOCATION AFTER 2012(%)	AMOUNT OF CHANGE (%)
Music Tech.	24.3	37.3	13
Music Theory	28.3	18.3	-10
Performance	18.4	29.1	10.7
Music History and Literature	6.4	5.8	-0.6
YÖK	4.5	4.4	-0.1
Language	5.5	3.3	-2.2
Information Tech.	6.4	0	-6.4
Composition	1.7	0	-1.7
Other	4.5	1.8	-2.7

Music technology curriculum of Cumhuriyet University has given a 10.7 % rise to performance category courses after 2012. IT and composition courses have been discontinued completely where general electives represented here as being under the category of “other” here has also been lowered by 2.7%. The changes that took place after 2012 in Cumhuriyet University Music Technology Curriculum are also represented as a line chart with Figure 2.75, where the upward and downward shifts in percentages among course categories in the overall four-year curriculum can easily be observed.

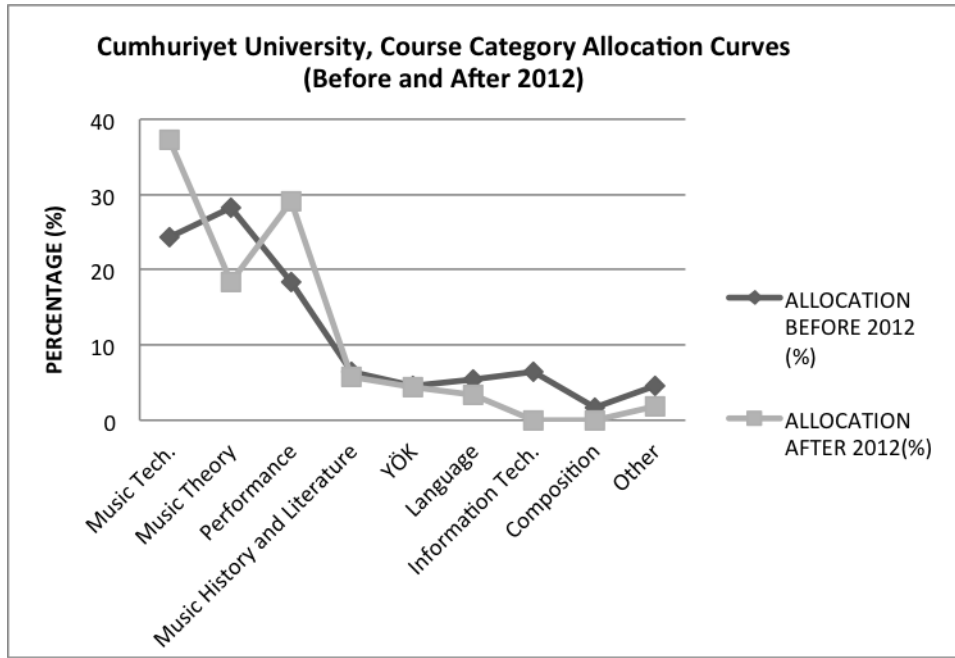


Figure 2.75 : Cumhuriyet University, Course Category Allocation Curves (Before and After 2012).

2.4.1 Findings for period after 2012

Looking at figures and tables presented until now in this section of this study, it can be seen that the music technology curriculums of Turkish universities has all undergone changes. It is possible to observe that the previous ranking in terms of the total amount allocated to music technology courses within four-year education offered by these universities has also been changed. Suleyman Demirel University was the first in the ranking previously, however it has discontinued the music technology program. Yildiz Technical University Audial Design program has been left out from further analysis because of the total amount of 0.8%, which it has allocated for music technology within four years of education. In the light of the recent data gathered in accordance with the five recent Turkish music technology curriculums after 2012, a new ranking is formed. The previous ranking was shown in Table 2.11. The new ranking in terms of the total amount allocated to music technology courses within four-year education is given in Table 2.18.

On comparing Table 2.11 with Table 2.18, it is concluded that the rank of DEU music technology program has not changed and the program is still the one offering the most amount of courses in music technology. However, ITU has taken a giant step upward and came close to follow DEU tightly with the total amount of 53.5% allocated to music technology courses within four-year sound recordings curriculum.

Bilgi University music curriculum previously in the third rank with an allocated amount of 35.4% of its four-year program to music technology has fallen to the fifth and the last order by recently allocating 26% of its curriculum to music technology after 2012. The recent situation suggests that the department is taking shape towards a more generalized music education accordingly as stated on its recent website.

Table 2.18 : Total percentage ranking in terms of ‘music technology’ category courses among undergraduate Music Technology programs in Turkey after 2012.

UNIVERSITY	DIVISION / PROGRAMME	TOTAL MOUNT OF MUSIC TECHNOLOGY WITHIN FOUR-YEAR CURRICULUM (%)	RANK
Dokuz Eylul	Music Technology	56.5	1
Istanbul Technical	Sound Recordings	53.5	2
Cumhuriyet	Music Technology	37.3	3
Inonu	Music Technology	37	4
Bilgi	Music	26	5

Cumhuriyet and Inonu universities have also raised the total amount dedicated to music technology courses within the four-year curriculums they offer. They were previously also very close to each other in the ranking before 2012 and the situation does not seem to have changed significantly. With the exception of Bilgi University, Turkish universities seem to have spared total amounts ranging between 37% and 56.5% to music technology within the whole bachelors education. Although the reasons behind their drives and the parameters affecting their decision making is beyond the scope of this study, it can be said that the allocation per categories strongly related to the human resources, the technological progress and industrial needs as also stated by Isikhan (2012) in the case of the explanation of DEU music technology curriculum he has written about. Since the programs cannot be considered independent neither of these requirements nor the recent developments in technology worldwide, the reasons behind the changes in the curriculum that Isikhan (2012) states can be applied to achieve more generalized conclusions about Turkish universities.

After 2012, contrary to the changes that have been made by Turkish universities in their music technology curriculums, the foreign universities have either undergone no changes at all or did some minor tailoring in their music technology programs when compared to their Turkish equivalents. According to the data gathered before and after 2012, Capital, Northeastern, and Edinburgh universities have not performed any changes within their music technology curriculum where NYU, Miami, and Birmingham universities have made changes in allocation of course categories, each of which does not exceed an amount of 7.5% per category. The recent changes calculated in music technology curriculums of NYU, Miami and Birmingham City universities are given in Tables K.1 to K.3 respectively. The changes that took place after 2012 in music technology curriculums of NYU, Miami and Birmingham City universities are also represented as line charts in Figures K.1 to K.3 where the upward and downward shifts in percentages among course categories in the overall four-year curriculums can easily be observed.

As can be interpreted from Figure K.1, NYU has two very similar allocation curves that intersect across many points on the lines. While the amount of 43% spared for music technology category courses remains intact along with other course categories, the three changed categories in terms of credit allocation are music theory (+4%), performance (-2%) and the category of “other” (-2%). The mentioned changes are also shown and available per course category in Table K.1.

Figure K.2, which indicate the changes in University of Miami music engineering curriculum before and after 2012 as non-intersecting points on the comparison lines suggests that the most amount of change that took place within this particular curriculum is the raised amount of music technology courses. The exact amount of the upward shift that can be observed through Figure K.2 is 7.5% and is given in Table K.2. University of Miami has made the most changes to its “music engineering” curriculum among all other foreign universities. It has reduced music history and literature courses by 4.6%, performance courses by 4%, music business courses by 2.4%, raised music technology and liberal arts courses by 7.5% and 2.8% respectively where engineering courses were as a ‘whole’ and the rest of the courses are ‘nearly’ kept intact.

The changes regarding Birmingham City University’s music technology curriculum can be explored through Table K.3 and Figure K.3. A quick look at the comparison

curves in the line chart presented with Figure K.3 indicates that the two curves intersect nearly as a whole and seem more like one line than two, because Birmingham City University applied minor changes to the music technology curriculum. The category of music technology has been reduced by 4.1%; the categories of musicology/ethnomusicology and music business have both been raised by 2.3% where engineering category courses have been reduced by the insignificant amount of 0.5%.

2.5 Comparison Between Periods Before and After 2012

As a result of the derived results from calculations and graphs of the course category credit allocations, it is possible to state that the Turkish universities have undergone more changes after 2012 than the foreign universities have done. The curriculum structure has also been changed by Turkish programs where the foreign universities kept their curriculum intact structurally. The changes in the foreign music technology curriculums are found to be originating either because of newly introduced/removed courses or of changes in the number of credits of existing courses. However, the curriculum structures have not been changed at all. The course categories offered before and after 2012 are neither discontinued nor newly offered. In other words, all the course categories that are offered by all of the foreign programs are still present and no newly added categories are added to the existing ones. Furthermore, the curriculums are either unchanged or changed in very minor fashion. This indicates that the education in music technology offered by foreign universities selected for this study remains consistent for each individual university. In the case of Turkish music technology curriculums, we can observe that some categories are abandoned as a whole especially in terms of the compulsory courses or reduced significantly mostly replaced by music technology courses, while some new ones are introduced especially in the “other” category in the forms of electives. Three of the still present curriculums represent an inclination towards raising music technology category with the four-year music technology curriculum.

There is more diversity in terms of the type of bachelor’s degrees achieved after completion of undergraduate education offered by the foreign universities. Some programs offer BA (Bachelor of Arts), some offer B.Sc. (Bachelor of Science), some B.M (Bachelor of Music), some B.A.P.S (Bachelor of Arts in Professional Studies)

etc. Capital University offers two degrees in music technology like B.M and B.A.P.S where the degrees are designed slightly different from each other in terms of the entrance audition, minor's availability and accreditation. There appears to be not much of information on which type of degree achieved upon completion of undergraduate education in music technology in a Turkish university.

Before 2012, Turkish music technology curriculums were all offering courses in performance, music theory and music history & literature as compulsory courses. After 2012, ITU has started to offer music history & literature courses as electives where other Turkish universities still have compulsory courses in music history & literature. Not all Turkish curriculums host music business and composition courses where it is also the case in foreign curriculums both before and after 2012.

YÖK courses, which could be considered as being under the category of “liberal Arts” if they were to be present in foreign universities, are only found in Turkish universities and form an example of state intervention to general undergraduate education. YÖK category forms approximately 4.4%-6% of each Turkish music technology curriculum where liberal arts category courses make up 8%-23% of USA curriculums. Birmingham and Edinburgh do not have any liberal arts category courses. The case of the presence of liberal art category courses does not indicate a change before and after 2012.

General tendency among Turkish universities was to allocate a share of 15% - 16% to music theory courses before 2012. ITU and Cumhuriyet University were exceptions as explained previously. After 2012, the general amount dedicated to music theory ranges between 16% - 20% with no exceptions other than Bilgi University. In the case of foreign universities, this amount ranges from 0% to 20% where most of the programs remain under 13%. Indeed the only program that allocates 20% to music theory courses is Northeastern University. Other listed curriculums are all below 13% in terms of credit allocation within four-year education.

Turkish music technology curriculums all started to offer general elective courses after 2012 which was the case before that year as described previously. The foreign curriculums have all required electives either before or after 2012.

The course contents of Turkish universities were published either insufficiently or were not published on their websites at all before 2012 where all the course descriptions were published sufficiently by foreign universities. This case has also been changed by Turkish universities publishing their course catalogs.

There still are no course syllabi available online either of Turkish or foreign universities.

3. AN ALTERNATIVE MODULAR UNDERGRADUATE MUSIC TECHNOLOGY CURRICULUM DESIGN MODEL

3.1.1 Need for a New Curriculum Design

The number of studies for updating and modernizing the undergraduate curricula for many areas of education is rising each passing day. These studies highlight a general problem the university education is facing. Lightfoot (2006, p.65) indicates that the university-based education is at a crossroads due to the rapid creation of new knowledge in technical fields, the changing demographics of an aging population, and the adherence to traditional curriculum design and delivery by universities. The university is supposed to pick one of the ways either by modernizing (via embracing modern technology) or conserving its traditional way of offering knowledge. According to Lightfoot (2006), it is inevitable for the university to develop new curricula because of the direct competition from for-profit competitors in lifetime-learning market [37]. Although Lightfoot offers a modular curriculum design solution for the online information technology education, only some aspects of his modular approach could be adapted for offline undergraduate music technology curriculum.

Currently, Turkish universities offer curriculums with more courses available and thus emphasizing “music recording and production” aspect of music technology education. The electives, on the other hand, are offered mainly in two or three groups with one these groups being “general electives outside the major” in all cases. The other group(s) is generally named as “vocational” electives, which are mostly offered from music courses. However, the curriculums still offer some room to be expanded as to cover more subjects in the “engineering and sound design” realms. Furthermore, the current curriculum is open to development only in terms of replacement of the existing courses with the new ones. A new modular alternative could open the path to adding new courses while preserving the old ones. It could also provide opportunities for adding some courses online.

With the problems described above, the main drive behind presenting an alternative modular curriculum is to provide an example that could enable Turkish music technology programs to fill in “engineering and sound design” room where and when there would be a possibility that the circumstances would occur for applicability. A modular approach is thought of being advantageous on the student side also where the students would have more chance to design their own curriculum in accordance with their choices of subject they wish to learn and vision for their future career options. This is taken into consideration to promote learner-oriented education, which is an approach to teaching that is increasingly being encouraged in higher education¹.

In the light of the statements and conclusions arrived and described in the previous sections, it is assumed that a modular design approach in curriculum might be considered an alternative solution to enable the student to choose from a number of specializations among such broad a field. However, a modular curriculum would necessarily require more resources to be adopted. This requirement could be fulfilled by offering courses from other faculties. In the case of a need for more outer support in terms of teaching staff, the adjunct part-time instructors could be made available. In other words, a modular curriculum would require the individual music technology departments to make more use of the universities’ resources since it will span along other disciplines that music technology interacts and will continuously develop more interaction with.

3.1.2 Considerations and Assumptions

The modular curriculum design offered here could be made available through a core one-year education preceding three years with differentiating courses among modules. The curriculum design might or might not yield to different degrees such as B.A. or B.Sc; however, the degrees offered at the end of the undergraduate education would be the choice of the department and university, which is assumed to be done in accordance with each university’s regulations.

¹ Supplementary information on learner-centered can be found: Blumberg, P. (n.d.). Learner-Centered Teaching. Retrieved from <http://www.usciences.edu/teaching/Learner-Centered/>.

The conventions like the total number of credits or ECTS credits that are implemented by Turkish music technology programs are followed and each term is made up of 30 ECTS credits. The modules are formed from course pools, which the departments could pick in accordance with their resources. The pools might further be expanded to cover more courses in the future as the resources of the institutions could develop or they might be reduced in case of contrasting circumstances could occur. The modularity is thought to be providing more flexibility to curriculum development.

The courses within the modules of the proposed design are the present courses readily available and offered by Turkish and foreign music technology curriculums. Therefore, the “modules” defined here are “course groups” that are reorganized elements of the curriculum. The “music technology” category, as it has been mentioned throughout this whole study, is further collapsed into categories in a deductive manner to find out which courses are more relevant to each module of the modular curriculum design proposed here and then regrouped into the modules. This design proposed should be thought as an alternative approach to forming an undergraduate music technology curriculum that could be tried and implemented due to choices of the individual departments, which are known to depend on many parameters sourcing either from inside and outside of the departments. Therefore the proposed design attempt does not claim to be a universally valid modal to undergraduate music technology education; rather it is “open” to be discussed and to take shape according to resources of each institution, to further studies analyzing student experience, expectations, and feedback and to ever development. This modular curriculum design is presented as being open because it is only a basis formation that is in coherence with the “curriculum of the future” as an open system, stated by Young (2002, p.91), and that can take shape with the future needs that might arise, that it considers ongoing communication between learners and advisors, that it builds modules around categories with assumptions made upon occupational requirements. The occupations a music technology graduate might be specialized in are very diverse and broad as represented with Table L.1. The list is gathered from web pages of many universities, special interest groups, and career websites along time.

It should also be noted that the occupations are not restricted to the ones in the table. Moreover, music technology professionals are at many times expected to be “jack of all trades” who composes, designs, operates, implements and manages the whole audio development and production process lines [38]. Due to these reasons and the interdisciplinary nature of “music technology” applications in industry, it is nearly impossible to list all the skills the occupations require. It might also be the reason why a previous study has not been done on this issue. The instructor of the course should describe the skills that would be achieved upon completion precisely. This curriculum design is built upon the assumptions that the instructors would identify the skills, learning outcomes and ECTS credits for the courses. To sum up, the modular curriculum design aims

- To promote learner-centered but guided educational planning
- To be expandable or reducible to provide flexibility to meet new requirements
- To promote non-linear knowledge sequencing (solution adapted from Lightfoot’s proposal)
- To relate to occupational requirements as skills needed to perform specialized tasks
- To eventually enable curriculum developers to deliver a variety of degrees optionally
- To provide a tool for curriculum development in the process of educational transformation

Meeting these goals is indeed a monumental undertaking, which requires the work of academic staff and curriculum planning specialists because of its difficulty in creating a fully efficient and usable learning schema with associated content. Moreover, there is a challenge predicted to occur as a resistance to change and bureaucratic obstacles by the academy when the curriculum will be adopted and implemented. It will also require an ongoing updating process because of the changing nature of technologies. However, it will enable to rethink the curriculum as a more organic and dynamic structure that is able to adapt more quickly to changing circumstances.

3.1.3 Modular Curriculum Design Model

The modular curriculum is offered in the form of a design rather than a full and complete curriculum. This design is assumed flexible and open to be expanded or reduced due to emerging needs for whatever reasons they might originate from.

The curriculum structure is adopted from Lightfoot's modular curriculum proposal [37]. The main "body of knowledge" described by Lightfoot is replaced with "the area of study" where the "areas" is interpreted into "modules" and "units" into "courses" for applicability to the offline face-to-face education. Another changed factor in adaptation is that removed curriculum cores have been introduced back into the first year of the program. Lightfoot removes core courses but he solves the problem of required "linear sequencing" in forms of the prerequisites. The modular curriculum design for music technology offers a year of core education and thus eliminates most of the need for prerequisites in the following three years to some degree in return. There will still be a need for prerequisites; however, this will be at a minimal amount. Despite those changes made during adoption, it remains possible for future implementations that the hierarchy of knowledge proposed by Lightfoot (2006) could be used as is if online education would be introduced into the curriculum.

The structure of the first year of education with compulsory courses proposed in the modular music technology curriculum design is illustrated in Figure M.1. The main area of study is music technology and the first year of the study is designed as to include compulsory courses resulting in 60 ECTS credits, hence 30 ECTS credits per term. Each term is made up of four compulsory modules with exemplified credit allocations in Figure M.1. However, the department if needed can change the exemplified credit allocations. The modules are listed as "music technology essentials," "music essentials," scientific inquiry" and "liberal arts." Liberal arts courses are YÖK courses, which are compulsory in any undergraduate curriculum in Turkey. As known from the previous research, each of these courses is assigned 2 ECTS credits by the examined Turkish curriculums. The same convention has been followed which resulted in the assignation of 6 out of 30 ECTS total credits to liberal art category. The scientific inquiry has been introduced to the curriculum as adopted partly from foreign curriculums with the aim of providing a foundational ground to further study in engineering and design aspects of the education. Music technology

essentials courses are thought as key for providing the necessary background for enabling the students to choose any of the courses within any of the modules in the following years of education.

The compulsory courses are decided with considerations like covering state compulsory courses (like YÖK courses) and with the assumption that the foundation has to be formed for the learners to be able to choose from a diversity of modules in the forthcoming terms. In other words, the compulsory courses selected for the first year of education in music technology are thought to provide the students with more liberty in their learning path. After successful completion of the first year of study, the learner can choose to take any of the courses from any of the following modules except for a very few courses which have prerequisites.

The general organizational hierarchy for the following three years of education of the proposed alternative modular music technology curriculum design is illustrated in Figure M.2. As can be seen in the figure, some of the courses are provided as “slots” which can be filled in by the department. These slots are formed from the categories the examined music technology curriculums host. The slots in the ‘music module’ are examples where the department can fill in with any number of courses. On the other hand, the particular courses with names can be gathered into other courses. For example, the courses within the “Recording Module” can be gathered into courses following the convention like “Studio II, III” or “Recording II, III” etc. This implementation is probable to some extent to form a hybrid or transitional curriculum between modular and conventional designs. However, it should be noted that such an implementation would require the prerequisites to be introduced back into the system, which will sacrifice the whole idea of the modular education. This will bend the modular curriculum design proposed here towards the conventional curriculums, which are still in action. In other words, the more prerequisites introduced into the curriculum will wrest the curriculum to approach more towards its current status which will result in less changes.

Throughout this study, it has been observed that ECTS credits per course differ among the examined music technology curriculums. For example, Dokuz Eylul and Cumhuriyet universities spare 5 ECTS credits for ‘Acoustics I’ where ITU spares 3 ECTS for the course with the same name. That’s why ECTS credits are not proposed in the modular curriculum design. As it is known, ECTS is tightly related to student

workload and workload refers to the notional time an average learner might expect to complete the required learning outcomes. Each instructor can decide the credit load of the courses they are teaching that will be discussed within the department administrative board where it will be implemented in the curriculum. Besides the goals of developing a learner-centered curriculum and providing more flexibility, this is another reason why the curriculum is proposed as a design rather than a fixed model.

3.1.4 Guidelines for Implementation

The modular design model proposed here should be thought of a basis and exemplary framework that can be tailored to specific requirements of each department's own agenda. The modular model offers opportunities for flexibility and autonomously shaped personalized learning paths for learners. Since it is a design that aims to be a “bridging model from traditional to future education” rather than being a final one, which is suitable for application by current traditional educational institutions, it still has a foundational year followed by three years that can be filled in by the learner by selecting among many courses. However, for this design to function properly, some prerequisites and considerations should be taken into account in implementation by the curriculum decision-making bodies that are listed below.

Broader Selection of Courses: The purpose of presenting a broader selection of courses should be one of the main focuses in adapting this modular model. The learners must be provided a vast amount of courses that could be chosen from depending upon learners' own needs for education. It should be noted that there is a huge amount of diversity among the learners, which may be in the form of educational backgrounds, areas of interests, the beliefs, and confidence regarding one's own success areas etc. all of which also might change along the time of their undergraduate education. Since it has gained recognition among many educational scientists, the education must be flexible enough to meet each and every learner's needs without excluding anyone. It is crucial at this point to be as open-minded as possible to provide the learners with a vast amount of variety in their education.

Guidance: With such a broad amount of courses in the curriculum, it would be very important to provide the learners with guidance to help them to choose among these

courses. The guidance should be provided in different forms and exclusively. One form of guidance is the counseling and help that should accompany the students in their course selection process. Another form of guidance would be in written form providing tools and information as

- a) lists of learning outcomes, program outcomes, course descriptions in catalogues, skills;
- b) as charts of course & program outcomes matrices [40]; courses vs. skills matrix charts, skills vs. specializations and occupation matrix charts [38] and
- c) Per course detailed information as syllabi of the courses etc.

The learners should be instructed in detail about what skills they would achieve, what subjects they would be studying and how they would combine these within a four-year study that would help them shape and decide over their final specialization areas at the end of their education. The guidance should provide them with all the tools, information, and foresight that they would have a chance to see throughout their educational way beforehand.

Learner participation in curriculum development: The educational scientist, Ken Robinson argues that the education is not a mechanical but a human system, which is about people who either would or would not want to learn. Human, as being organic creatures need organic educational systems, which are personalized [41]. The best way to personalize the curriculum at higher educational level, in my opinion, is to involve “learners” within the process of decision-making about how it would be offered that what they would learn, which defines the curriculum development.

Surveys have to be conducted in curriculum development process in order to gain feedback from and gather opinions of the students. The questions regarding the courses should be asked in order to self-assess the current curriculum. The learners should be asked about how useful current courses prove to be for them and how they can be further developed, what courses they would like to be included within the curriculum and why and what they think about the compliance between the department and course learning outcomes to their learning goals. There is also an indisputable human factor on the side of the education providers that should continuously be assessed. Tools for assessing the instructors should be developed

and applied. All the replies should be evaluated and the results should be used for constructive attempts in curriculum development and education design.

Transforming the roles of “teacher” and “learner”: The recent research by educational scientist Sugata Mitra proves that “education is a self-organizing system, where learning is an emergent phenomenon” [42]. In Mitra’s experiments starting from 1999 and still going on, there is no teacher included within education; the population is yet again students learning by themselves. The closest thing in his experiments to “teacher” is an older figure (a granny or an older person whose only task is prove positive reinforcement) or the students themselves teaching each other. Yet the results are fascinating in terms of the measured success. Although his research is generally among kids at primary to middle school age groups, the results would be applicable to any grade study. Currently Mitra has theorized his statement about learning as an emerging phenomenon out of curiosity and takes one step further and conducts new research to question if “knowing will be obsolete in the future” or to put it in another way, if it is necessary to store “knowledge” in our brains even though we will always have a chance to access it via new technology.

In such an environmental change in educational climate, the norms of traditional education, which has been set forth by the requirements of industrialism, would necessarily be subject to follow this change. The roles assigned to “teachers,” “learners” and even to the schools by the norms of industrialist traditional education started to prove invalid as the recent researches indicate. In my opinion, “knowing” will only be considered obsolete depending on the circumstances determining the access to it. Within this new educational environment driven by technological developments, teachers would still be needed, however the role of the “teacher” as we know of today will have to be transformed into a “reinforcing, guiding and reliable content provider” figure. In implementing the modular curriculum design offered here, it would be convenient for instructors to consider their own role as being “a guide to lead the learners to where knowledge is and assist them to structure their self-learning process.” The transition to the future curriculum models that are foreseen as being independent of “time, place, and executors” is thought to be eased for the departments by offering a reformative bridging modular curriculum design model. My point is the sooner the traditional university chooses to adapt to the demands and needs of the future learners and to their ways of self-learning, the

higher the chance it has for survival among the competitive environment among the emerging new educational institutions that desire and seek to meet these demands and needs.

4. CONCLUSIONS

The selected music technology curriculums offered by Turkish and foreign universities were categorized into course groups in terms of individual disciplines they relate to. Since there are no syllabi available, the categorization has been decided by reading through course descriptions supplied by the instructors. Each selected individual curriculum has then been calculated and analyzed in terms of credit allocations per course category in depth per each term. In order to be able to compare full four-year curriculums and derive inductive generalized results, the total amount of allocations per category per curriculum were calculated by taking their average, hence the arithmetic mean. The total course category allocations for four-years of education offered by each university have subsequently been compared quantitatively and both qualitative and quantified findings have been derived, discussed, and evaluated.

The research has been conducted for two periods of time as being before and after 2012 with 2012 being the year when Turkish universities has changed their curriculums the most. The findings for each of the two periods have been listed in relevant sections and have again been compared and evaluated subsequently.

The music technology curriculums offered by universities selected for this study suggest both resemblances and differences as a result of the comparisons made both before and after 2012. Foreign curricula representing more diversity among themselves where the curriculums offered by Turkish universities have more resemblances within emerged as a generalized result from this research. Music technology curriculum in Turkey emphasizes more on the music production aspect of music technology, which in itself is inclined to be frameworked around studio production more. Foreign programs, on the other hand, offer more courses in sound production and design as well as audio engineering. As found out, it is hard to frame music technology as a discipline and it should be considered as an interdisciplinary field rather than a single discipline. The traditional job description of sound engineers as artistic recording directors of music productions is continuously

expanding, which is attributable to the increased integration of multimedia technologies. This means that the profession "sound engineer" nowadays also applies to the theatre, film, and television media, where competent professionals with a trained ear are often needed in the sound department. It has been concluded that Turkish music technology curricula has still some room to include more courses in "sound engineering and design" in comparison with its foreign counterparts.

Between 2009 and 2012, nine of all the state universities used to have ten music technology departments or pathways within the music departments, three of which have been formally founded but have not started education, and one of them being a Masters program. One of the privately owned and run universities used to have music technology as a pathway within the music department. On examining curricula before 2012 of the mentioned music technology programs, first thing which attracted attention was that these curriculums differed from one another in some aspects, while retaining some others as examined in previous sections. However, nearly all of them shared an aspect to be in common: These programs were not fulfilling the requirements of "technology" area of the four-year undergraduate education yet. Many of them shared nearly the same curricula and did not show much difference from that of the general music or musicology education curriculum, at least in the first two or three years of education. Therefore it is concluded that Turkish music technology curricula should be transitioned towards a curriculum that could easily become more adaptable to fulfill the educational and occupational needs of the "learners" of the new era that are mainly driven by recent and continuously ongoing technological developments.

The human resources universities, the academic teaching staff seemed to be a key influencer in terms of the curriculum design. In the field of music technology, the academic staff seemed also of shortage, partly because of the field's being relatively new in Turkey and partly because not all of the graduates chose to follow the academic career path. Therefore, either most of the academic staff of the said programs was imported from abroad, or they were current professionals of the industry who were not full-time faculty members, or they were few in number. This also was a situation, which offered some hope with the rising amounts of graduates from our relatively new departments. Some of these graduates would decide to have an academic career. Thanks to exchange programs like Erasmus, some of these new

graduates would also be among the ones who could experience hands-on aspect of music technology education abroad in the hosting university they attended, even though they would not have had the chance to practice in their home university. It is concluded that the more the number of music technology instructors within a department, the more diversity took place among courses that were being offered in the field of music technology.

After 2012, things started to change for Turkish music technology curricula in terms of the raised amounts of music technology courses probably due to newly hired academic staff. In general, music technology curriculums of Turkish universities started to include more courses of music technology and reduced the previously high amounts of credits allocated for music theory, performance, and music history & literature category courses. The propositions made at the beginning of this research in 2009 that the undergraduate music technology education did not include as many ‘music technology’ courses as it should and that this would be subject to change in the forthcoming years were validated by itself in the course of time. Another proposition was that the music technology would be in relation to more disciplines in the future due to the developments in technology resulting in the expansion of the demands from the related industries, which could require more diversity in terms of courses included in music technology curriculum. The curriculums might need to be adjusted accordingly as to offer more courses for enabling future students to specialize in more numbers of music technology related fields. If assumptions need to be made, the curriculums are thought to offer electives that are more general at first in order to fulfill this need and they would have to become more modular as to include a number of tracks within music technology in a not-so-distant future. This could also be thought as an evolutionary process along time, which would result in more disciplines to be born out of music technology just like the music technology education was born out of tonmeistering practices.

It is found out that there are continuous debates, discussions, ideas, and research going on about where the education is generally heading towards and what it would be like in the future. There are many ideas, which have both common and differentiating foresights regarding future educational systems like unschooling, self-learning, learning independent of time and place, personalized-learning etc., almost every one of which depends on recent developments in technology and the changing

learning habits, demands and needs of the people. What each of these ideas share in common is the idea that the traditional education started and has –not to ‘reform’ but– to transform to adapt the changing educational climate. In compliance with the foresights about future education, it is assumed that undergraduate music technology curricula would have to catch up with the fast technological progression. However, the resistance to change and bureaucracy prove to be two largely accepted obstacles against a learner-centered curriculum, it is assumed that the transformation would not happen overnight. Nevertheless, a modular curriculum model might be an attempt to provide more choices for learners to design their education. In order to contribute this attempt, a modular curriculum design specific to undergraduate music technology education was proposed that could be used as a bridging transformational basis that could provide the flexible ground to be easily adaptable to the emerging requirements of future curriculum models. The proposed modular curriculum design model is detailed in the study along with guidelines to be followed and considered in implementation.

This study describing the current status of Turkish music technology curricula could further be expanded and prolonged along time as new undergraduate programs would originate and the current ones would experience further changes. The attempts to expand the framework of this study is supposed to benefit most from observation and new data collection.

The primary research conducted here was using a mixed methodology making use of a variety of methods from descriptive to critical case studies, both inductive and deductive reasoning to either generalize or derivatize through comparisons and data collection methods of field studies applied to internet research by approaching websites of the selected music technology programs and universities as the field and main resource of data. The reasons why the curriculum is as it is as offered by the institution was a subject outside the framework of this research. However, the causality that shapes curriculum design and development remains an important issue. More research is required to combine findings from this study with the new data in order to shape the future music technology curricula. Structured interviews and questionnaires might be designed and applied to a population of all stakeholders in education (e.g. learners, instructors, administrators and the state) and well be added as survey to generate new data and expand the current research. This would

lead to new findings that could originate new results that could be applied when transforming the music technology curricula as to adapt to the emerging future educational systems. It could also help hypothesize more emerging issues that are not covered within this study or lead to theorization of any aspects that was already referred.

The proposed modular curriculum design model, if chosen to be implemented by any institution, should not only be inherited as a structure model but also the guidelines should be considered in implementation for the model to function successfully. The design model cannot be thought independent from the guidelines in this sense. However, the model can be used as if to increase or decrease any number of courses within modules, or in cases of no possible circumstances to offer courses in a certain module, that module could be spared for future considerations. In other words, the ingredients of the modules could be changed but the modules should be kept intact and not subtracted from the curriculum. Yet, it is highly recommended to adapt the model with all the modules since the main goal is to provide the learners with more diversity and to enable them to design their own educational process.

Another recommendation is that new modules could be added for expanding the curriculum to meet new requirements or to offer even a more diverse and interdisciplinary education.

When proposing a modular curriculum, it is mentioned as an argument as also current research points at, future holds a transformational potential about education and the reforms will not be adequate to meet the requirements by the learners. As it is the nature of this transformation that it will proceed as time will, we cannot decide for certain in details how the implementations would be, however we can presume the circumstances where learning would take place independent of time and place constrains as the change is driven mainly by technological developments in information technologies. It is highly recommended to be ready for the procession of broader areas of specializations, occupations, hence new courses that will continuously expand and keep on affect the music technology curriculum.

The alternative modular curriculum design model for music technology undergraduate education proposed here has neither been implemented nor tested yet. In case of implementation by a university, it is recommended that it should be

assessed by instructors and learners as well as administrators of the implementing bodies and should further be studied in terms of functionality and effectiveness along with reported results about the model's possible success or failure.

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APPENDICES

APPENDIX A: Turkish Music Technology Curriculums before 2012, Term I.

APPENDIX B: Turkish Music Technology Curriculums before 2012, Term II.

APPENDIX C: Turkish Music Technology Curriculums before 2012, Term III.

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APPENDIX J: Foreign Music Technology Curriculums before 2012.

APPENDIX K: Changes in Foreign Music Technology Curriculums after 2012.

APPENDIX L: Occupations, Areas and Professions in Music Technology.

APPENDIX M: Modular Music Technology Curriculum Design Schemes.

APPENDIX A: Turkish Music Technology Curriculums before 2012, Term I

Table A.1 : DEU, Music Technology Curriculum, Term I.

DEU TERM I								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano I	Performance	1	1	1.5	N/A	5.9	5.9	Performance
Audio Electronics	Music Tech.	4	0	4	N/A	15.7	7.8	Language
Physics of Sound I	Music Tech.	2	0	2	N/A	7.8	11.8	IT
Basic Musical Concepts I	Music Theory	4	0	4	N/A	15.7	23.5	Music Tech.
Ear Training & Solfege I	Music Theory	2	2	3	N/A	11.8	23.5	YÖK
Basic Information Technology	IT	2	2	3	N/A	11.8	27.5	Music Theory
Ataturk Principles (1 Year)	YÖK	4	0	4	N/A	15.7		
Turkish I	YÖK	2	0	2	N/A	7.8		
Language (German /French/ English)	Language	2	0	2	N/A	7.8		
	TOTAL	23	5	25.5	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 25.5 = 3,9215								

Table A.2 : Inonu Uni. Music Technology Curriculum, Term I.

INONU TERM I								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano I	Performance	1	0	1	N/A	5.3	15.8	Performance
Reading/Dictation/Theory I	Music Theory	2	0	2	N/A	10.5	21.1	Music Theory
Harmony I	Music Theory	2	0	2	N/A	10.5	10.5	Music Tech.
Introduction to Music Technology I	Music Tech	2	0	2	N/A	10.5	21.1	YÖK
Individual Playing I	Performance	1	0	1	N/A	5.3	15.8	IT
Individual Singing I	Performance	1	0	1	N/A	5.3	15.8	Language
Turkish I	YÖK	2	0	2	N/A	10.5		
Atatürk Principles I	YÖK	2	0	2	N/A	10.5		
Basic Information Technology I	Information Tech	2	2	3	N/A	15.8		
Foreign Language I	Language	3	0	3	N/A	15.8		
	TOTAL	18	2	19	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 19 = 5,2631								

Table A.3 : Cumhuriyet Uni. Music Technology Curriculum, Term I.

CUMHURİYET TERM I								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Basic IT usage	Information Tech	1	2	0	2	0.0	11.8	Performance
Piano I	Performance	1	0	1	1	5.9	11.8	Music History and Literature
Individual Voice Training I	Performance	1	0	1	1	5.9	23.5	Music Tech.
History of Music I	Music History and Literature	2	0	2	2	11.8	41.2	Music Theory
Introduction to Music Technology	Music Tech	2	0	2	2	11.8	11.8	IT
Electronics I	Music Tech	2	0	2	2	11.8		
Introduction to Turkish Music I	Music Theory	2	0	2	2	11.8		
Musical Hearing, Reading and Dictation I	Music Theory	4	2	5	6	29.4		
Programming Languages I	Information Tech	2	0	2	2	11.8		
		17	4	17	20	100	100	
multiplying coefficient for percentile calculation = 100/17=5,8823								

Table A.4 : ITU, Sound Recordings Curriculum, Term I.

ITU TERM I								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
The Theory and Solfeggio of Turkish Music I	Music Theory	4	0	4	N/A	20.5	56.4	Music Theory
The Theory and Solfeggio of Music I	Music Theory	4	0	4	N/A	20.5	23.1	Music Tech.
Technique of Sound Recording 1	Music Tech	2	1	2.5	N/A	12.8	5.1	Performance
Studio Equipment Knowledge I	Music Tech	2	0	2	N/A	10.3	15.4	Language
Piano I	Performance	1	0	1	N/A	5.1		
The Knowledge of Rhythm	Music Theory	2	2	3	N/A	15.4		
English I	Language	3	0	3	N/A	15.4		
		18	3	19.5	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 19,5 = 5,1282								

Table A.5 : S. Demirel Uni. Music Technology Curriculum, Term I.

S. DEMIREL TERM I								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Secondary Instrument I	Performance	1	0	1	N/A	3.6	3.6	Performance
Musical Perception and Reading I	Music Theory	2	2	3	N/A	10.7	10.7	Music Theory
Historical Evolution of Music I	Music History and Literature	4	0	4	N/A	14.3	14.3	Music History and Literature
Art History I	Other	2	0	2	N/A	7.1	14.3	Other
Cultural History I	Other	2	0	2	N/A	7.1	14.3	YÖK
Turkish I	YÖK	2	0	2	N/A	7.1	14.3	Language
Atatürk Principles I	YÖK	2	0	2	N/A	7.1	28.6	Music Tech.
Foreign Language I	Language	4	0	4	N/A	14.3		
Fundamentals of Audio Technology I	Music Tech	4	0	4	N/A	14.3		
Introduction for Music Technology I	Music Tech	4	0	4	N/A	14.3		
		27	2	28	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 28=3,5714								

Table A.6 : Bilgi Uni. Music Curriculum, Term I.

BILGI TERM I								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Fundamentals of Music I	Music Theory	4	N/A	4	N/A	22.2	22.2	Music Theory
Survey of Essential Texts on Music I	Music History and Literature	8	N/A	8	N/A	44.4	44.4	Music History and Literature
Turkish I	YÖK	3	N/A	3	N/A	16.7	16.7	YÖK
MIDI and Sound Technology I	Music Tech	3	N/A	3	N/A	16.7	16.7	Music Tech.
		18	N/A	18	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 18 = 5,5555								

Table A.7 : YTU, Audial Design Curriculum, Term I.

YTU TERM I								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Basic Music Design I	Other	2	2	3	4	30.0	30.0	Other
Music Skills I	Music Theory	2	2	3	4	30.0	30.0	Music Theory
Design Major Branch I	Musicology/Ethno-musicology	1	2	2	3	20.0	20.0	Musicology / Ethno-musicology
Turkish I	YÖK	2	0	2	2	20.0	20.0	YÖK
		7	6	10	13	100	100	
multiplying coefficient for percentile calculation = 100 / 10 =10								

APPENDIX B: Turkish Music Technology Curriculums before 2012, Term II

Table B.1 : DEU, Music Technology Curriculum, Term II.

DEU TERM II								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano II	Performance	1	1	1.5	N/A	6.7	6.7	Performance
Studio Electronics	Music Tech	4	0	4	N/A	17.8	8.9	Language
Physics of Sound II	Music Tech	2	0	2	N/A	8.9	8.9	YÖK
Basic Musical Concepts II	Music Theory	4	0	4	N/A	17.8	17.8	Music History and Literature
Ear Training & Solfeggio II	Music Theory	2	2	3	N/A	13.3	26.7	Music Tech.
Repertoire I	Music History and Literature	4	0	4	N/A	17.8	31.1	Music Theory
Turkish II	YÖK	2	0	2	N/A	8.9		
Language	Language	2	0	2	N/A	8.9		
		21	3	22.5	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 22.5 = 4,4444$								

Table B.2 : Inonu Uni. Music Technology Curriculum, Term II.

INONU UNI TERM II								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano II	Performance	1	0	1	N/A	5.3	15.8	Performance
Reading/Dictation/Theory II	Music Theory	2	0	2	N/A	10.5	21.1	Music Theory
Harmony II	Music Theory	2	0	2	N/A	10.5	10.5	Music Tech.
Introduction to Music Technology II	Music Tech	2	0	2	N/A	10.5	21.1	YÖK
Individual Playing II	Performance	1	0	1	N/A	5.3	15.8	IT
Individual Singing II	Performance	1	0	1	N/A	5.3	15.8	Language
Turkish II	YÖK	2	0	2	N/A	10.5		
Atatürk Principles II	YÖK	2	0	2	N/A	10.5		
Basic Information Technology II	Information Tech	2	2	3	N/A	15.8		
Foreign Language II	Language	3	0	3	N/A	15.8		
		18	2	19	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 19 = 5,2631$								

Table B.3 : Cumhuriyet Uni. Music Technology Curriculum, Term II.

CUMHURIYET TERM II									
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION		
		T	P	TOTAL	ECTS		TOTAL	CATEGORY	
Basic Computer Science	Information Tech	2	2	3	3.0	15.0	10	Performance	
Piano II	Performance	1	0	1	1.0	5.0	10	Music History and Literature	
Individual Voice Training II	Performance	1	0	1	1.0	5.0	20	Music Tech.	
History of Music II	Music History and Literature	2	0	2	2.0	10.0	35	Music Theory	
Introduction to Acoustics	Music Tech	2	0	2	0.0	10.0	25	IT	
Electronics II	Music Tech	2	0	2	2.0	10.0			
Introduction to Turkish Music II	Music Theory	2	0	2	2.0	10.0			
Musical Hearing, Reading and Dictation II	Music Theory	4	2	5	6.0	25.0			
Programming Languages II	Information Tech	2	0	2	2.0	10.0			
		18	4	20	19	100	100		
multiplying coefficient for percentile calculation = $100 / 20 = 5$									

Table B.4 : ITU, Sound Recordings Curriculum, Term II.

ITU TERM II									
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION		
		T	P	TOTAL	ECTS		TOTAL	CATEGORY	
THE THEORY AND SOLFEGGIO OF TURKISH MUSIC II	Music Theory	4	0	4	N/A	20.5	41.0	Music Theory	
THE THEORY AND SOLFEGGIO OF BASIC MUSIC II	Music Theory	4	0	4	N/A	20.5	23.1	Music Tech.	
TECHNIQUE OF SOUND RECORDING II	Music Tech	2	1	2.5	N/A	12.8	5.1	Performance	
STUDIO EQUIPMENT KNOWLEDGE II	Music Tech	2	0	2	N/A	10.3	15.4	Language	
PIANO II	Performance	1	0	1	N/A	5.1	15.4	Music History and Literature	
WORLD MUSIC HISTORY	Music History and Literature	3	0	3	N/A	15.4			
ENGLISH II	Language	3	0	3	N/A	15.4			
		19	1	19.5	N/A	100	100		
multiplying coefficient for percentile calculation = $100 / 19,5 = 5,1282$									

Table B.5 : S. Demirel Uni. Music Technology Curriculum, Term II.

S. DEMIREL TERM II								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Secondary Instrument II	Performance	1	0	1	N/A	3.2	3.2	Performance
Musical Perception and Reading II	Music Theory	2	2	3	N/A	9.7	9.7	Music Theory
Historical Evolution of Music II	Music History and Literature	4	0	4	N/A	12.9	12.9	Music History and Literature
Art History II	Other	2	0	2	N/A	6.5	12.9	Other
Cultural History II	Other	2	0	2	N/A	6.5	12.9	YÖK
Turkish II	YÖK	2	0	2	N/A	6.5	12.9	Language
Atatürk Principles II	YÖK	2	0	2	N/A	6.5	9.7	IT
Basic Information Technology	IT	2	2	3	N/A	9.7	25.8	Music Tech.
Foreign Language II	Language	4	0	4	N/A	12.9		
Fundamentals of Audio Technology II	Music Tech	4	0	4	N/A	12.9		
Introduction for Music Technology II	Music Tech	4	0	4	N/A	12.9		
		29	4	31	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 31 = 3,2258								

Table B.6 : Bilgi Uni. Music Curriculum, Term II.

BILGI TERM II								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Fundamentals of Music II	Music Theory	4	N/A	4	N/A	22.2	22.2	Music Theory
Survey of Essential Texts on Music II	Music History and Literature	8	N/A	8	N/A	44.4	44.4	Music History and Literature
Turkish II	YÖK	3	N/A	3	N/A	16.7	16.7	YÖK
MIDI and Sound Technology II	Music Tech	3	N/A	3	N/A	16.7	16.7	Music Tech
		18	N/A	18	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 18 = 5,5555								

Table B.7 : YTU, Audial Design Curriculum, Term II.

YTU TERM II								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Basic Music Design II	Other	2	2	3	4.0	25.0	25.0	Other
Music Skills II	Music Theory	2	2	3	4.0	25.0	25.0	Music Theory
Design Major Branch II	Musicology/ Ethno-musicology	1	2	2	3.0	16.7	16.7	Musicology/ Ethno-musicology
Turkish II	YÖK	2	0	2	2.0	16.7	16.7	YÖK
Piano I	Performance	3	0	2	3.0	16.7	16.7	Performance
		10	6	12	16	100	100	
multiplying coefficient for percentile calculation = 100/12=8,3333								

APPENDIX C: Turkish Music Technology Curriculums before 2012, Term III

Table C.1 : DEU, Music Technology Curriculum, Term III.

DEU TERM III								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano III	Performance	1	1	1.5	N/A	4.9	4.9	Performance
Signal Flow and Routing I	Music Tech	4	0	4	N/A	13.1	6.6	Language
Microphone Techniques	Music Tech	2	0	2	N/A	6.6	6.6	YÖK
Acoustics I	Music Tech	4	0	4	N/A	13.1	13.1	Music History and Literature
Basic Musical Concepts II	Music Theory	4	0	4	N/A	13.1	32.8	Music Tech.
Harmony and Analysis of Music I	Music Theory	4	0	4	N/A	13.1	36.1	Music Theory
Ear Training & Solfege III	Music Theory	2	2	3	N/A	9.8		
Repertoire II	Music History and Literature	4	0	4	N/A	13.1		
Turkish II	YÖK	2	0	2	N/A	6.6		
Language (German /French/ English)	Language	2	0	2	N/A	6.6		
		29	3	30.5	N/A	100	100	
multiplying coefficient for percentile calculation = 100/30.5= 3,2786								

Table C.2 : Inonu Uni. Music Technology Curriculum, Term III.

INONU UNI TERM III								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano III	Performance	1	0	1	N/A	6.3	37.5	Performance
Reading/Dictation/Theory III	Music Theory	2	0	2	N/A	12.5	25.0	Music Theory
Harmony III	Music Theory	2	0	2	N/A	12.5	12.5	Music Tech.
Music Technology I	Music Tech	2	0	2	N/A	12.5	12.5	Language
Music History I	Music History and Literature	2	0	2	N/A	12.5	12.5	Music History and Literature
Voice ensemble I	Performance	1	2	2	N/A	12.5		
Instrumental Ensemble I	Performance	2	0	2	N/A	12.5		
Individual Playing III	Performance	1	0	1	N/A	6.3		
Foreign Language II	Language	2	0	2	N/A	12.5		
		18	2	16	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 16 = 6,25								

Table C.3 : Cumhuriyet Uni. Music Technology Curriculum, Term III.

CUMHURİYET TERM III								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Choir I	Performance	2	0	2	0.0	7.4	14.8	Performance
Piano III	Performance	1	0	1	3.0	3.7	7.4	Music History and Literature
Individual Voice Training II	Performance	1	0	1	1.0	3.7	29.6	Music Tech.
History of Music II	Music History and Literature	2	0	2	2.0	7.4	33.3	Music Theory
Acoustics I	Music Tech	2	0	2	3.0	7.4	7.4	IT
Basics of Sound Technology	Music Tech	2	0	2	2.0	7.4	7.4	YÖK
Methods of Sound Synthesis	Music Tech	2	0	2	4.0	7.4		
MIDI	Music Tech	2	0	2	0.0	7.4		
Theory and Applications of Turkish Music I	Music Theory	2	0	2	3.0	7.4		
Forms in Music	Music Theory	2	0	2	2.0	7.4		
Harmony I	Music Theory	1	2	2	5.0	7.4		
Musical Hearing, Reading and Dictation III	Music Theory	3	0	3	5.0	11.1		
Advanced Programming Techniques	Information Tech	2	0	2	0.0	7.4		
Principles and Revolutions of Atatürk I	YÖK	2	0	2	2.0	7.4		
		26	2	27	N/A	100	100	
multiplying coefficient for percentile calculation = 100/27=3,7037								

Table C.4 : ITU, Sound Recordings Curriculum, Term III.

ITU TERM III								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
THE THEORY AND SOLFEGGIO OF TURKISH MUSIC III	Music Theory	4	0	4	N/A	21.6	43.2	Music Theory
THE THEORY AND SOLFEGGIO OF BASIC MUSIC III	Music Theory	4	0	4	N/A	21.6	35.1	Music Tech.
TECHNIQUE OF SOUND RECORDING III	Music Tech	2	1	2.5	N/A	13.5	5.4	Performance
INTRODUCTION TO ELECTRONICS	Music Tech	2	0	2	N/A	10.8	16.2	Language
STUDIO EQUIPMENT KNOWLEDGE III	Music Tech	2	0	2	N/A	10.8		
PIANO III	Performance	1	0	1	N/A	5.4		
ENGLISH III	Language	3	0	3	N/A	16.2		
		18	1	18.5	N/A	100	100	
multiplying coefficient for percentile calculation = 100/18,5=5,405								

Table C.5 : S. Demirel Uni. Music Technology Curriculum, Term III.

S.DEMIREL TERM III								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Secondary Instrument III	Performance	1	0	1	N/A	4.5	4.5	Performance
Musical Perception and Reading III	Music Theory	2	2	3	N/A	13.6	31.8	Music Theory
Historical Evolution of Music III	Music History and Literature	4	0	4	N/A	18.2	18.2	Music History and Literature
Turkish Folk Music	Music Theory	2	0	2	N/A	9.1	45.5	Music Tech.
Harmony and Analysis I	Music Theory	2	0	2	N/A	9.1		
Acoustical Analysis	Music Tech	4	0	4	N/A	18.2		
Analog Electronics	Music Tech	4	0	4	N/A	18.2		
MIDI	Music Tech	2	0	2	N/A	9.1		
		21	2	22	N/A	100	100	
multiplying coefficient for percentile calculation = 100/22=4,5454								

Table C.6 : Bilgi Uni. Music Curriculum, Term III.

BILGI TERM III								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Musicianship I	Music Theory	4	N/A	4	N/A	22.2	22.2	Music Theory
History of Western Music	Music History and Literature	3	N/A	3	N/A	16.7	16.7	Music History and Literature
History of Turkish Revolution I	YÖK	2	N/A	2	N/A	11.1	11.1	YÖK
Critical Listening	Other	3	N/A	3	N/A	16.7	16.7	Other
Physics of Sound and Music	Music Tech	3	N/A	3	N/A	16.7	33.3	Music Tech
Jingle Writing	Music Tech	3	N/A	3	N/A	16.7		
		18	N/A	18	N/A	100	100	
multiplying coefficient for percentile calculation = 100/18=5,5555								

Table C.7 : YTU, Audial Design Curriculum, Term III.

YTU TERM III								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Music History I	Music History and Literature	2	0	2	3.0	16.7	16.7	Music History and Literature
Music Skills III	Music Theory	2	2	3	5.0	25.0	25.0	Music Theory
Design Major Branch III	Musicology/Ethno-musicology	2	2	3	5.0	25.0	41.7	Musicology/Ethno-musicology
Design Major Branch Seminar I	Musicology/Ethno-musicology	1	2	2	3.0	16.7	16.7	Performance
Piano II	Performance	3	0	2	4.0	16.7		
		10	6	12	20	100	100.0	
multiplying coefficient for percentile calculation = 100/12=8,3333								

APPENDIX D: Turkish Music Technology Curriculums before 2012, Term IV

Table D.1 : DEU, Music Technology Curriculum, Term IV.

DEU TERM IV								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano IV	Performance	1	1	1.5	N/A	6.1	6.1	Performance
Signal Flow and Routing II	Music Tech	4	0	4.0	N/A	16.3	49.0	Music Tech
MIDI	Music Tech	4	0	4.0	N/A	16.3	28.6	Music Theory
Acoustics II	Music Tech	4	0	4.0	N/A	16.3	16.3	Music History and Literature
Harmony and Analysis of Music II	Music Theory	4	0	4.0	N/A	16.3		
Ear Training & Solfeggio IV	Music Theory	2	2	3.0	N/A	12.2		
Repertoire III	Music History and Literature	4	0	4.0	N/A	16.3		
		23	3	24.5	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 24.5 = 4,0816$								

Table D.2 : Inonu Uni. Music Technology Curriculum, Term IV.

INONU UNI TERM IV								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano IV	Performance	1	0	1	N/A	6.3	37.5	Performance
Reading/Dictation/Theory IV	Music Theory	2	0	2	N/A	12.5	25.0	Music Theory
Harmony IV	Music Theory	2	0	2	N/A	12.5	12.5	Music Tech
Music Technology II	Music Tech	2	0	2	N/A	12.5	12.5	Music History and Literature
Music History II	Music History and Literature	2	0	2	N/A	12.5	12.5	Language
Voice ensemble II	Performance	1	2	2	N/A	12.5		
Instrumental Ensemble II	Performance	2	0	2	N/A	12.5		
Individual Playing IV	Performance	1	0	1	N/A	6.3		
Foreign Language IV	Language	2	0	2	N/A	12.5		
		15	2	16	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 16 = 6,2500$								

Table D.3 : Cumhuriyet Uni. Music Technology Curriculum, Term IV.

CUMHURİYET TERM IV								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Chorus II	Performance	2	0	2	0.0	7.4	11.1	Performance
Piano IV	Performance	1	0	1	3.0	3.7	7.4	Music History and Literature
Popular Music	Music History and Literature	2	0	2	3.0	7.4	33.3	Music Tech
Acoustics II	Music Tech	2	0	2	3.0	7.4	33.3	Music Theory
Musical Notation with Computer	Music Tech	2	0	2	2.0	7.4	7.4	Information Tech
Sound Synthesis Software I	Music Tech	2	0	2	0.0	7.4	7.4	YÖK
Studio I	Music Tech	1	0	1	10.0	3.7		
Recording Techniques I	Music Tech	2	0	2	2.0	7.4		
Theory and Applications of Turkish Music II	Music Theory	2	0	2	3.0	7.4		
Forms in Music	Music Theory	2	0	2	2.0	7.4		
Harmony II	Music Theory	1	2	2	5.0	7.4		
Musical Hearing, Reading and Dictation IV	Music Theory	3	0	3	5.0	11.1		
Advanced Programming Techniques II	Information Tech	2	0	2	0.0	7.4		
Principles and Revolutions of Atatürk II	YÖK	2	0	2	2.0	7.4		
		26	2	27	40	100	100	
multiplying coefficient for percentile calculation = $100 / 27 = 3,7037$								

Table D.4 : ITU, Sound Recordings Curriculum, Term IV.

ITU TERM IV								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
THE THEORY AND SOLFEGGIO OF TURKISH MUSIC IV	Music Theory	4	0	4	N/A	20.5	41.0	Music Theory
THE THEORY AND SOLFEGGIO OF BASIC MUSIC IV	Music Theory	4	0	4	N/A	20.5	38.5	Music Tech
TECHNIQUE OF SOUND RECORDING IV	Music Tech	2	1	2.5	N/A	12.8	5.1	Performance
STUDIO ACOUSTICS	Music Tech	3	0	3	N/A	15.4	15.4	Language
STUDIO EQUIPMENT KNOWLEDGE IV	Music Tech	2	0	2	N/A	10.3		
PIANO IV	Performance	1	0	1	N/A	5.1		
ENGLISH IV	Language	3	0	3	N/A	15.4		
		19	1	19.5	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 19,5 = 5,1282$								

Table D.5 : S. Demirel Uni. Music Technology Curriculum, Term IV.

S. DEMIREL TERM IV								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Secondary Instrument IV	Performance	1	0	1	N/A	5.6	5.6	Performance
Musical Perception and Reading IV	Music Theory	2	2	3	N/A	16.7	27.8	Music Theory
Historical Evolution of Music IV	Music History and Literature	4	0	4	N/A	22.2	22.2	Music History and Literature
Harmony and Analysis II	Music Theory	2	0	2	N/A	11.1	44.4	Music Tech
Digital Electronics	Music Tech	4	0	4	N/A	22.2		
PA Systems	Music Tech	4	0	4	N/A	22.2		
		17	2	18	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 18 = 4,5555								

Table D.6 : Bilgi Uni. Music Curriculum, Term IV.

BILGI TERM IV								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Musicianship II	Music Theory	4	N/A	4	N/A	22.2	22.2	Music Theory
History and Philosophy of New Music	Music History and Literature	3	N/A	3	N/A	16.7	16.7	Music History and Literature
History of Turkish Revolution II	YÖK	2	N/A	2	N/A	11.1	11.1	YÖK
Introduction to Composition	Composition	3	N/A	3	N/A	16.7	16.7	Composition
Studio as a Compositional Tool	Music Tech	3	N/A	3	N/A	16.7	16.7	Music Tech
Ensemble	Performance	3	N/A	3	N/A	16.7	16.7	Performance
		18	N/A	18	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 18 = 5,5555								

Table D.7 : YTU, Audial Design Curriculum, Term IV.

YTU TERM IV								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Music History II	Music History and Literature	2	0	2	3.0	13.3	13.3	Music History and Literature
Music Skills IV	Music Theory	2	2	3	5.0	20.0	20.0	Music Theory
Design Major Branch IV	Musicology/Ethnomusicology	2	2	3	3.0	20.0	33.3	Musicology/Ethnomusicology
Design Major Branch Seminar II	Musicology/Ethnomusicology	1	2	2	3.0	13.3	13.3	Performance
Piano III	Performance	3	0	2	5.0	13.3	6.7	Music Tech
Audial Communication	Music Tech	1	0	1	1.0	6.7	13.3	Language
English for Musicians I	Language	4	0	2	2.0	13.3		
		15	6	15	22	100	100	
multiplying coefficient for percentile calculation = 100 / 15 = 6,6666								

APPENDIX E: Turkish Music Technology Curriculums before 2012, Term V

Table E.1 : DEU, Music Technology Curriculum, Term V.

DEU TERM V								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Studio Equipments I	Music Tech	4	0	4.0	N/A	22.2	100.0	Music Tech
Audio Technology and Computer	Music Tech	2	0	2.0	N/A	11.1		
Studio I	Music Tech	4	4	6.0	N/A	33.3		
Broadcast Audio Technology	Music Tech	4	0	4.0	N/A	22.2		
Music & Media I	Music Tech	2	0	2.0	N/A	11.1		
		16	4	18	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 18 = 5,5555$								

Table E.2 : Inonu Uni. Music Technology Curriculum, Term V.

INONU UNI TERM V								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano V	Performance	1	0	1.0	N/A	6.3	37.5	Performance
Reading/Dictation/Theory V	Music Theory	2	0	2.0	N/A	12.5	12.5	Music Theory
Arranging Techniques I	Music Tech	2	0	2.0	N/A	12.5	37.5	Music Tech
Music Technology III	Music Tech	2	0	2.0	N/A	12.5	12.5	Language
Organology	Music Tech	2	0	2.0	N/A	12.5		
Voice ensemble III	Performance	1	2	2.0	N/A	12.5		
Instrumental Ensemble III	Performance	2	0	2.0	N/A	12.5		
Individual Playing V	Performance	1	0	1.0	N/A	6.3		
Foreign Language V	Language	2	0	2.0	N/A	12.5		
		15	2	16	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 16 = 6,2500$								

Table E.3 : Cumhuriyet Uni. Music Technology Curriculum, Term V.

CUMHURİYET TERM V								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Chorus III	Performance	2	2	3.0	0.0	15.0	20.0	Performance
Piano V	Performance	1	0	1.0	2.0	5.0	25.0	Music Tech
Sound Synthesis Software II	Music Tech	2	0	2.0	0.0	10.0	45.0	Music Theory
Studio II	Music Tech	1	0	1.0	9.0	5.0	10.0	YÖK
Recording Techniques II	Music Tech	2	0	2.0	2.0	10.0		
Theory and Applications of Turkish Music III	Music Theory	2	0	2.0	2.0	10.0		
Harmony III	Music Theory	3	0	3.0	0.0	15.0		
Musical Dictation	Music Theory	2	0	2.0	0.0	10.0		
Accompaniment and Arrangement I	Music Theory	2	0	2.0	0.0	10.0		
Turkish - I	YÖK	2	0	2.0	2.0	10.0		
		19	2	20	17	100	100	
multiplying coefficient for percentile calculation = 100 / 20 = 5,0000								

Table E.4 : ITU, Sound Recordings Curriculum, Term V.

ITU TERM V								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
INSTRUMENTATION	Music Theory	2	0	2.0	N/A	14.3	46.4	Music Theory
THE KNOWLEDGE OF MUSICAL FORMS	Music Theory	2	0	2.0	N/A	14.3	32.1	Music Tech
HARMONY 1	Music Theory	2	1	2.5	N/A	17.9	21.4	Other
TECHNIQUE OF SOUND RECORDING V	Music Tech	2	1	2.5	N/A	17.9		
ORDERING OF FRETS AND TUNING TECHNIQUES	Music Tech	2	0	2.0	N/A	14.3		
ELECTIVE FROM HUMANITIES	Other	3	0	3.0	N/A	21.4		
		13	2	14	N/A	100	100	
multiplying coefficient for percentile calculation = 100/14=7,1428								

Table E.5 : S. Demirel Uni. Music Technology Curriculum, Term V.

S. DEMIREL TERM V								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Composition Techniques I	Composition	2	0	2.0	N/A	11.1	11.1	Composition
Repertoire of Folk Music	Music Theory	2	0	2.0	N/A	11.1	22.2	Music Theory
History of Turkish Popular Music I	Music History and Literature	2	0	2.0	N/A	11.1	11.1	Music History and Literature
Aesthetic and Art Philosophy I	Other	2	0	2.0	N/A	11.1	11.1	Other
Musical Analysis I	Music Theory	2	0	2.0	N/A	11.1	44.4	Music Tech
Mixing Techniques	Music Tech	4	0	4.0	N/A	22.2		
Studio Hardware	Music Tech	4	0	4.0	N/A	22.2		
		18	0	18	N/A	100.0	100.0	
multiplying coefficient for percentile calculation = 100 / 18 = 5,5555								

Table E.6 : Bilgi Uni. Music Curriculum, Term V.

BILGI TERM V								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Creative Workshop and Ensemble	Composition	3	N/A	3.0	N/A	20.0	20.0	Composition
Rhythmical Concepts	Music Theory	3	N/A	3.0	N/A	20.0	20.0	Music Theory
Audio Recording Technologies I	Music Tech	3	N/A	3.0	N/A	20.0	60.0	Music Tech
Sound Reinforcement and Concert Sound	Music Tech	3	N/A	3.0	N/A	20.0		
Applied Computer Music I: Interactivity and Sound Synthesis	Music Tech	3	N/A	3.0	N/A	20.0		
		15	N/A	15.0	N/A	100.0	100.0	
multiplying coefficient for percentile calculation = 100 / 15 = 6,6666								

Table E.7 : YTU, Audial Design Curriculum, Term V.

YTU TERM V								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Music History III	Music History and Literature	2	0	2.0	4.0	14.3	14.3	Music History and Literature
Music Skills V	Music Theory	2	2	3.0	5.0	21.4	21.4	Music Theory
Design Major Branch V	Musicology/ Ethno-musicology	2	2	3.0	3.0	21.4	35.7	Musicology/ Ethno-musicology
Design Major Branch Seminar III	Musicology/ Ethno-musicology	1	2	2.0	5.0	14.3	14.3	Performance
Piano IV	Performance	3	0	2.0	5.0	14.3	14.3	Language
English for Musicians II	Language	2	0	2.0	2.0	14.3		
		12	6	14	24	100	100	
multiplying coefficient for percentile calculation = 100 / 14 =7,1428								

APPENDIX F: Turkish Music Technology Curriculums before 2012, Term VI

Table F.1 : DEU, Music Technology Curriculum, Term VI.

DEU TERM VI								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Audio Software	Music Tech	2	0	2.0	N/A	11.1	100.0	Music Tech
Studio EquipmentsII	Music Tech	4	0	4.0	N/A	22.2		
Studio II	Music Tech	4	4	6.0	N/A	33.3		
Concert Sound	Music Tech	4	0	4.0	N/A	22.2		
Music & Media II	Music Tech	2	0	2.0	N/A	11.1		
		16	4	18	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 18 = 5,5555$								

Table F.2 : Inonu Uni. Music Technology Curriculum, Term VI.

INONU UNI TERM VI								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano VI	Performance	1	0	1.0	N/A	6.3	37.5	Performance
Reading/Dictation/Theory VI	Music Theory	2	0	2.0	N/A	12.5	25.0	Music Theory
Arranging Techniques II	Music Tech	2	0	2.0	N/A	12.5	25.0	Music Tech
Music Technology IV	Music Tech	2	0	2.0	N/A	12.5	12.5	Language
Orchestration	Music Tech	2	0	2.0	N/A	12.5		
Voice ensemble IV	Performance	1	2	2.0	N/A	12.5		
Instrumental Ensemble IV	Performance	2	0	2.0	N/A	12.5		
Individual Playing IV	Performance	1	0	1.0	N/A	6.3		
Foreign Language VI	Language	2	0	2.0	N/A	12.5		
		15	2	16	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 16 = 6,2500$								

Table F.3 : Cumhuriyet Uni. Music Technology Curriculum, Term VI.

CUMHURİYET TERM VI								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Chorus IV	Performance	2	2	3.0	4.0	16.7	22.2	Performance
Piano VI	Performance	1	0	1.0	3.0	5.6	27.8	Music Tech
Music and Media	Music Tech	2	0	2.0	2.0	11.1	38.9	Music Theory
Studio III	Music Tech	1	0	1.0	10.0	5.6	11.1	YÖK
Mixing Techniques	Music Tech	2	0	2.0	2.0	11.1		
Theory and Applications of Turkish Music IV	Music Theory	2	0	2.0	2.0	11.1		
Harmony IV	Music Theory	3	0	3.0	0.0	16.7		
Accompaniment and Arrangement II	Music Theory	2	0	2.0	0.0	11.1		
Turkish - II	YÖK	2	0	2.0	2.0	11.1		
		17	2	18	25	100	100	
multiplying coefficient for percentile calculation = $100 / 18 = 5,5555$								

Table F.4 : ITU, Sound Recordings Curriculum, Term VI.

ITU TERM VI								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
ORCHESTRATION	Music Theory	2	0	2.0	N/A	11.1	36.1	Music Theory
THE KNOWLEDGE OF MUSICAL FORMS	Music Theory	2	0	2.0	N/A	11.1	25.0	Music Tech
HARMONY II	Music Theory	2	1	2.5	N/A	13.9	22.2	YÖK
TECHNIQUE OF SOUND RECORDING VI	Music Tech	2	1	2.5	N/A	13.9	16.7	Other
ACOUSTICS OF MUSICAL INSTRUMENTS	Music Tech	2	0	2.0	N/A	11.1		
TURKISH	YÖK	4	0	4.0	N/A	22.2		
ELECTIVE FROM HUMANITIES	Other	3	0	3	N/A	16.7		
		17	2	18	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 18 = 5,5555$								

Table F.5 : S. Demirel Uni. Music Technology Curriculum, Term VI.

S. DEMIREL TERM VI								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Composition Techniques II	Composition	2	0	2.0	N/A	11.1	11.1	Composition
Theory of Turkish Traditional Music	Music Theory	2	0	2.0	N/A	11.1	22.2	Music Theory
History of Turkish Popular Music II	Music History and Literature	2	0	2.0	N/A	11.1	11.1	Music History and Literature
Aesthetic and Art Philosophy II	Other	2	0	2.0	N/A	11.1	11.1	Other
Musical Analysis II	Music Theory	2	0	2.0	N/A	11.1	44.4	Music Tech
Microphone Techniques	Music Tech	2	2	3.0	N/A	16.7		
Digital Synthesis	Music Tech	2	0	2.0	N/A	11.1		
Studio I	Music Tech	2	2	3.0	N/A	16.7		
		16	4	18	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 18 = 5,5555								

Table F.6 : Bilgi Uni. Music Curriculum, Term VI.

BILGI TERM VI								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Composition Workshop	Composition	3	N/A	3.0	N/A	20.0	20.0	Composition
Orchestration	Music Theory	3	N/A	3.0	N/A	20.0	20.0	Music Theory
Audio Recording Technologies II	Music Tech	3	N/A	3.0	N/A	20.0	60.0	Music Tech
Post Production and Remixing	Music Tech	3	N/A	3.0	N/A	20.0		
Applied Computer Music II: Multimedia and Performance	Music Tech	3	N/A	3.0	N/A	20.0		
		15	N/A	15.0	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 15 = 6,6666								

Table F.7 : YTU, Audial Design Curriculum, Term VI.

YTU TERM VI								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Music History IV	Music History and Literature	2	0	2.0	5.0	12.5	12.5	Music History and Literature
Music Skills VI	Music Theory	2	2	3.0	5.0	18.8	37.5	Music Theory
Design Major Branch VI	Musicology/ Ethno-musicology	2	2	3.0	5.0	18.8	31.3	Musicology/ Ethno-musicology
Design Major Branch Seminar IV	Musicology/ Ethno-musicology	1	2	2.0	5.0	12.5	18.8	Performance
		13	6	16	28	100	100	
multiplying coefficient for percentile calculation = 100 / 16 = 6,2500								

APPENDIX G: Turkish Music Technology Curriculums before 2012, Term VII

Table G.1 : DEU, Music Technology Curriculum, Term VII.

DEU TERM VII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Advanced Audio Software	Music Tech	2	2	3.0	N/A	23.1	100.0	Music Tech
Studio Practices I	Music Tech	0	8	4.0	N/A	30.8		
Editing-Mixing-Mastering	Music Tech	2	2	3.0	N/A	23.1		
Computer Music Composition	Music Tech	2	2	3.0	N/A	23.1		
Internships (200 hrs.)	Music Tech	0	0	0.0	N/A	0.0		
		6	14	13	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 13 = 7,6923								

Table G.2 : Inonu Uni. Music Technology Curriculum, Term VII.

INONU UNI TERM VII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano VII	Performance	1	0	1.0	N/A	9.1	36.4	Performance
Music and Multimedia	Music Tech	2	0	2.0	N/A	18.2	45.5	Music Tech
Music Technology Final Project I	Music Tech	2	2	3.0	N/A	27.3	18.2	Language
Instrumental Ensemble VII	Performance	2	0	2.0	N/A	18.2		
Individual Playing V	Performance	1	0	1.0	N/A	9.1		
English for Musicians I	Language	2	0	2.0	N/A	18.2		
		10	2	11	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 11 = 9,0909								

Table G.3 : Cumhuriyet Uni. Music Technology Curriculum, Term VII.

CUMHURIYET TERM VII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Chorus V	Performance	2	2	3.0	0.0	20.7	27.6	Performance
Piyano VII	Performance	1	0	1.0	5.0	6.9	20.7	Music Tech
Mastering Techniques	Music Tech	2	0	2.0	5.0	13.8	13.8	Composition
Studio IV	Music Tech	1	0	1.0	0.0	6.9	17.2	Other
Techniques of Musical Composition	Composition	2	0	2.0	2.0	13.8	20.7	Language
Philosophy of Music I	Other	2	0	2.0	0.0	13.8		
Foreign Language I	Language	3	0	3.0	3.0	20.7		
Project of Graduation	Other	0	1	0.5	8.0	3.4		
		13	3	14.5	23	100	100	
multiplying coefficient for percentile calculation = 100 / 14.5 = 6,8965								

Table G.4 : ITU, Sound Recordings Curriculum, Term VII.

ITU TERM VII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
ANALYSIS OF ORCHESTRATION	Music Theory	3	0	3.0	N/A	17.1	17.1	Music Theory
PSYCHOLOGY OF ARTISTS	Other	3	0	3.0	N/A	17.1	34.3	Other
TECHNIQUE OF SOUND RECORDING VII	Music Tech	2	1	2.5	N/A	14.3	25.7	Music Tech
TECHNIQUE OF STAGE RECORDING	Music Tech	2	0	2.0	N/A	11.4	22.9	YÖK
PRINCIPALS OF ATATURK AND HISTORY OF REVOLUTION	YÖK	4	0	4.0	N/A	22.9		
ELECTIVE FROM HUMANITIES	Other	3	0	3.0	N/A	17.1		
		17	1	17.5	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 17,5 = 5,7142$								

Table G.5 : S. Demirel Uni. Music Technology Curriculum, Term VII.

S. DEMIREL TERM VII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Research Design and Project I	Other	2	4	4.0	N/A	26.7	53.3	Other
Music and Media	Other	2	4	4.0	N/A	26.7	46.7	Music Tech
HD Recording and Non-linear Editing I	Music Tech	2	2	3.0	N/A	20.0		
Studio II	Music Tech	4	0	4.0	N/A	26.7		
		10	10	15	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 15 = 6,6666$								

Table G.6 : Bilgi Uni. Music Curriculum, Term VII.

BILGI TERM VII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Current Issues in the Music Industry	Music Business	3	N/A	3.0	N/A	20.0	20.0	Music Business
Senior Project I	Other	3	N/A	3.0	N/A	20.0	20.0	Other
Stereo Mixing and Mastering	Music Tech	3	N/A	3.0	N/A	20.0	40.0	Music Tech
Recording Studio Lab I	Music Tech	3	N/A	3.0	N/A	20.0	20.0	Music History and Literature
Sound Art	Music History and Literature	3	N/A	3.0	N/A	20.0		
		15	N/A	15	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 15 = 6,6666$								

Table G.7 : YTU, Audial Design Curriculum, Term VII.

YTU TERM VII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Music History V	Music History and Literature	2	0	2.0	6.0	10.0	10.0	Music History and Literature
Music Skills VII	Music Theory	2	2	3.0	6.0	15.0	45.0	Music Theory
Design Major Branch VII	Musicology/Ethno-musicology	2	2	3.0	6.0	15.0	45.0	Musicology/Ethno-musicology
Design Branch Project	Musicology/Ethno-musicology	3	6	6.0	12.0	30.0		
Turkish Music Rhythms I	Music Theory	3	0	3.0	4.0	15.0		
Maqam Studies II	Music Theory	3	0	3.0	4.0	15.0		
		15	10	20	38	100	100	
multiplying coefficient for percentile calculation = $100 / 20 = 5,0000$								

APPENDIX H: Turkish Music Technology Curriculums before 2012, Term VIII

Table H.1 : DEU, Music Technology Curriculum, Term VIII.

DEU TERM VIII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Project	Music Tech	2	2	3.0	N/A	27.3	100.0	Music Tech
Sound Design	Music Tech	2	2	3.0	N/A	27.3		
Studio Practices II	Music Tech	0	8	4.0	N/A	36.4		
Thesis	Music Tech	0	2	1.0	N/A	9.1		
		4	14	11	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 11 = 9,0909$								

Table H.2 : Inonu Uni. Music Technology Curriculum, Term VIII.

INONU UNI TERM VIII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Piano VIII	Performance	1	0	1.0	N/A	9.1	36.4	Performance
Film Music	Music Tech	2	0	2.0	N/A	18.2	45.5	Music Tech
Music Technology Final Project II	Music Tech	2	2	3.0	N/A	27.3	18.2	Language
Instrumental Ensemble VI	Performance	2	0	2.0	N/A	18.2		
Individual Playing VI	Performance	1	0	1.0	N/A	9.1		
English for Musicians II	Language	2	0	2.0	N/A	18.2		
		10	2	11	N/A	100	100	
multiplying coefficient for percentile calculation = $100 / 11 = 9,0909$								

Table H.3 : Cumhuriyet Uni. Music Technology Curriculum, Term VIII.

CUMHURİYET TERM VIII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Chorus VI	Performance	2	2	3.0	0.0	22.2	29.6	Performance
Piano VIII	Performance	1	0	1.0	5.0	7.4	14.8	Music Tech
Electronic Composition	Music Tech	2	0	2.0	2.0	14.8	18.5	Other
History of Turkish Music	Music History and Literature	2	0	2.0	0.0	14.8	14.8	Music History and Literature
Philosophy of Music II	Other	2	0	2.0	0.0	14.8	22.2	Language
Foreign Language II	Language	3	0	3.0	3.0	22.2		
Project of Graduation	Other	0	1	0.5	8.0	3.7		
		12	3	13.5	18	100	100	
multiplying coefficient for percentile calculation = $100 / 13.5 = 7,4074$								

Table H.4 : ITU, Sound Recordings Curriculum, Term VIII.

ITU TERM VIII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
MEASURE AND BEATING TECHNIQUE	Music Theory	2	1	2.5	N/A	15.6	15.6	Music Theory
ORGANOLOGY	Music History and Literature	3	0	3.0	N/A	18.8	18.8	Music History and Literature
TECHNIQUE OF SOUND RECORDING VIII	Music Tech	2	1	2.5	N/A	15.6	28.1	Music Tech
HARMONIC TECHNIQUES INSTRUMENTS	Music Tech	2	0	2.0	N/A	12.5	37.5	Other
GRADUATION THESIS	Other	0	6	3.0	N/A	18.8		
ELECTIVE FROM HUMANITIES	Other	3	0	3.0	N/A	18.8		
		12	8	16	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 16 = 6,2500								

Table H.5 : S. Demirel Uni. Music Technology Curriculum, Term VIII.

S.DEMIREL TERM VIII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Research Design and Project II	Other	2	4	4.0	N/A	26.7	53.3	Other
Final Project	Other	2	4	4.0	N/A	26.7	46.7	Music Tech
HD Recording and Non-linear Editing II	Music Tech	2	2	3.0	N/A	20.0		
Studio III	Music Tech	4	0	4.0	N/A	26.7		
		10	10	15	N/A	100	100	
multiplying coefficient for percentile calculation = 100 / 15 = 6,6666								

Table H.6 : Bilgi Uni. Music Curriculum, Term VIII.

BILGI TERM VIII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Special Topics in Music: Principles of Music Business	Music Business	3	N/A	3.0	N/A	20.0	20.0	Music Business
Senior Project II	Other	3	N/A	3.0	N/A	20.0	20.0	Other
Surround Mixing and Mastering	Music Tech	3	N/A	3.0	N/A	20.0	40.0	Music Tech
Recording Studio Lab II	Music Tech	3	N/A	3.0	N/A	20.0	20.0	Composition
Songwriting	Composition	3	N/A	3.0	N/A	20.0		
		15	N/A	15	N/A	100.0	100.0	
multiplying coefficient for percentile calculation = 100 / 15 = 6,6666								

Table H.7 : YTU, Audial Design Curriculum, Term VIII.

YTU TERM VIII								
NAME OF THE COURSE	COURSE CATEGORY	CREDITS				% PER COURSE	ARRANGED DISTRIBUTION	
		T	P	TOTAL	ECTS		TOTAL	CATEGORY
Music History VI	Music History and Literature	2	0	2.0	7.0	14.3	14.3	Music History and Literature
Music Skills VIII	Music Theory	2	2	3.0	6.0	21.4	42.9	Music Theory
Design Branch Major Project	Musicology/ Ethno-musicology	3	6	6.0	12.0	42.9	42.9	Musicology/ Ethno-musicology
Turkish Music Rhythms II	Music Theory	3	0	3.0	4.0	21.4		
		10	8	14	29	100	100	
multiplying coefficient for percentile calculation = $100 / 14 = 7,1428$								

APPENDIX J: Foreign Music Technology Curriculums before 2012

Table J.1 : NYU, Four-Year Music Technology Curriculum.

NAME OF THE COURSE	COURSE CATEGORY	TOTAL	% PER COURSE	ARRANGED DISTRIBUTION		TERM	Multiplying Coefficient
				TOTAL	CATEGORY		
Music Theory I	Music Theory	2	11.1	33	Music Tech	T E R M 1	multiplying coefficient for percentile calculation = 100/18=5.5555
Aural Comprehension I	Music Theory	1	5.6	22	Liberal Arts		
Keyboard Harmony and Improvisation I	Performance	1	5.6	22	Scientific Inquiry		
Collegium and Program Seminar	Other	0	0.0	17	Music Theory		
Electronics Technology I	Music Tech	3	16.7	6	Performance		
Music Tech Fundamentals	Music Tech	3	16.7				
Writing the Essay	Liberal Arts	4	22.2				
Math MAP Requirement	Scientific Inquiry	4	22.2				
New Student Seminar	Other	0	0.0				
TOTAL		18	100.0	100			
Music Theory II	Music Theory	2	11.1	33	Music Tech	T E R M 2	multiplying coefficient for percentile calculation = 100/18=5.5555
Aural Comprehension II	Music Theory	1	5.6	22	Liberal Arts		
Keyboard Harmony and Improvisation II	Performance	1	5.6	22	Scientific Inquiry		
Collegium and Program Seminar	Other	0	0.0	17	Music Theory		
Electronics Technology II	Music Tech	3	16.7	6	Performance		
Electronic Music Synthesis	Music Tech	3	16.7				
The Advanced College Essay	Liberal Arts	4	22.2				
Computational Design/ MAP Requirement	Scientific Inquiry	4	22.2				
TOTAL		18	100.0	100			
Music Theory III	Music Theory	2	11.8	35	Music Tech	T E R M 3	multiplying coefficient for percentile calculation = 100/17=5.8823
Aural Comprehension III	Music Theory	1	5.9	29	Liberal Arts		
Keyboard Harmony and Improvisation III	Performance	1	5.9	18	Music Theory		
Music History I	Music History and Literature	2	11.8	12	Music History and Literature		
Collegium and Program Seminar	Other	0	0.0	6	Performance		
Recording Tech I	Music Tech	4	23.5				
Recording Tech I Lab	Music Tech	2	11.8				
Performance Ensemble	Liberal Arts	1	5.9				
The Advanced College Essay/ MAP Requirement*	Liberal Arts	4	23.5				
TOTAL		17	100.0	100			
Music Theory IV	Music Theory	2	11.8	35	Music Tech	T E R M 4	multiplying coefficient for percentile calculation = 100/17=5.8823
Aural Comprehension IV	Music Theory	1	5.9	23	Scientific Inquiry		
Keyboard Harmony and Improvisation IV	Performance	1	5.9	18	Music Theory		
Music History II	Music History and Literature	2	11.8	12	Music History and Literature		
Collegium and Program Seminar	Other	0	0.0	6	Performance		
Recording Tech II	Music Tech	4	23.5	6	Liberal Arts		
Recording Tech II Lab	Music Tech	2	11.8				
Performance Ensemble	Liberal Arts	1	5.9				
Natural Science/ MAP Requirement	Scientific Inquiry	4	23.5				
TOTAL		17	100.0	100			
Music History III	Music History and Literature	2	11.8	59	Music Tech	T E R M 5	multiplying coefficient for percentile calculation = 100/17=5.8823
Concert Recording I	Music Tech	2	11.8	23	Language		
Audio for Video I	Music Tech	3	17.6	12	Music History and Literature		
Studio Maintenance I	Music Tech	3	17.6	6	Performance		
Collegium and Program Seminar	Other	0	0.0				
Performance Ensemble	Performance	1	5.9				
Foreign Language/ MAP Requirement	Language	4	23.5				
MIDI Technology/ Music Elective	Music Tech	2	11.8				
TOTAL		17	100.0	100			
Music History IV	Music History and Literature	2	11.8	59	Music Tech	T E R M 6	multiplying coefficient for percentile calculation = 100/17=5.8823
Concert Recording II	Music Tech	2	11.8	23	Liberal Arts		
Computer Music Synthesis	Music Tech	3	17.6	12	Music History and Literature		
Recording Practicum III / Guided Specialization	Music Tech	3	17.6	6	Performance		
Collegium and Program Seminar	Other	0	0.0				
Performance Ensemble	Performance	1	5.9				
Liberal Arts Elective	Liberal Arts	4	23.5				
Studio Maintenance II / Music Elective	Music Tech	2	11.8				
TOTAL		17	100.0	100			
Musical Acoustics	Music Tech	3	17.6	41	Music Tech	T E R M 7	multiplying coefficient for percentile calculation = 100/17=5.8823
Collegium and Program Seminar	Other	0	0.0	18	Liberal Arts		
Music Technology Internship	Music Tech	1	5.9	23	Other		
Recording Practicum IV / Guided Specialization	Music Tech	3	17.6	18	Music Business		
Special Topics/ Guided Specialization	Other	3	17.6				
Liberal Arts Elective	Liberal Arts	4	23.5				
Music Business/ Music Elective	Music Business	3	17.6				
TOTAL		17	100.0	100			
Performing Arts in Western Civilization	Liberal Arts	4	44.4	56	Music Tech	T E R M 8	multiplying coefficient for percentile calculation = 100/9=11.1111
Collegium and Program Seminar	Other	0	0.0	44	Liberal Arts		
Music Technology Internship	Music Tech	2	22.2				
Audio For Video II / Guided Specialization	Music Tech	3	33.3				
TOTAL		9	100.0	100			

Table J.2 : Capital University, Four-Year Music Technology Curriculum.

NAME OF THE COURSE	COURSE CATEGORY	TOTAL	% PER COURSE	ARRANGED DISTRIBUTION		TERM	Multiplying Coefficient
				TOTAL	CATEGORY		
Recital Attendance Semester 1	Performance	0	0.0	33	Liberal Arts	T E R M 1	multiplying coefficient for percentile calculation = 100/18=5.5555
One Hour Private Lesson	Performance	1	5.6	22	Music Theory		
Major Ensemble on Primary Instrument	Performance	1	5.6	17	Music History and Literature		
Music Literature I	Music History and Literature	3	16.7	17	Performance		
Class Keyboard I	Performance	1	5.6	5.5	Musicology/Ethno-musicology		
Tech Maj Intro. to Music Software	Music Tech	1	5.6	5.5	Music Tech		
World Music Lab	Musicology/Ethno musicology	1	5.6				
Musicianship/Audiation I	Music Theory	4	22.2				
General Education Goal 1 or 2	Liberal Arts	3	16.7				
General Education Goal 1 or 2	Liberal Arts	3	16.7				
TOTAL		18	100.0	100			
Recital Attendance Semester 2	Performance	0	0.0	23	Music Theory	T E R M 2	multiplying coefficient for percentile calculation = 100/17=5.8823
One Hour Private Lesson	Performance	1	5.9	18	Liberal Arts		
Major Ensemble on Primary Instrument	Performance	1	5.9	18	Music History and Literature		
Music Literature II	Music History and Literature	3	17.6	18	Performance		
Class Keyboard II	Performance	1	5.9	18	Music Tech		
Production & History of Electronic Music	Music Tech	3	17.6	5	Musicology/Ethno-musicology		
World Music Lab	Musicology/Ethno musicology	1	5.9				
Musicianship/Audiation II	Music Theory	4	23.5				
General Education Goal 1 or 2	Liberal Arts	3	17.6				
TOTAL		17	100.0	100			
Recital Attendance Semester 3	Performance	0	0.0	37	Liberal Arts	T E R M 3	multiplying coefficient for percentile calculation = 100/16=6.25
One Hour Private Lesson	Performance	1	6.3	25	Music Theory		
Major Ensemble on Primary Instrument	Performance	1	6.3	19	Music Tech		
Third semester theory	Music Theory	4	25.0	19	Performance		
Jazz/Cont. Keyboard I	Performance	1	6.3				
Intro to Audio Elect. And Recording Tech.	Music Tech	3	18.8				
General Education Goal 3, 4, 5, 7, 8, or 9.	Liberal Arts	3	18.8				
General Education Goal 3, 4, 5, 7, 8, or 9.	Liberal Arts	3	18.8				
TOTAL		16	100.0	100			
Recital Attendance Semester 4	Performance	0	0.0	47	Music Tech	T E R M 4	multiplying coefficient for percentile calculation = 100/17=5.8823
One Hour Private Lesson	Performance	1	5.9	23	Music Theory		
Major Ensemble on Primary Instrument	Performance	1	5.9	18	Liberal Arts		
Music Industry Applied Activities	Music Tech	1	5.9	12	Performance		
Fourth semester theory	Music Theory	4	23.5				
Intermediate Recording Techniques	Music Tech	3	17.6				
Multimedia & Web Development	Music Tech	3	17.6				
General Education Goal 3, 4, 5, 7, 8, or 9.	Liberal Arts	3	17.6				
Sound Reinforcement Seminar	Music Tech	1	5.9				
TOTAL		17	100.0	100			
Recital Attendance Semester 5	Performance	0	0.0	51	Music Tech	T E R M 5	multiplying coefficient for percentile calculation = 100/16.5= 6.0606
Half Hour Private Lesson	Performance	0.5	3.0	37	Liberal Arts		
Major Ensemble on Primary Instrument	Performance	0.5	3.0	6	Music Theory		
Half Hour Recital	Music Tech	0.5	3.0	6	Performance		
Beginning Conducting	Music Theory	1	6.1				
Electronic Composition Workshop	Music Tech	1	6.1				
Team Recording	Music Tech	1	6.1				
Television Production	Music Tech	3	18.2				
General Education Goal 3, 4, 5, 7, 8, or 9	Liberal Arts	3	18.2				
General Education Goal 3, 4, 5, 7, 8, or 9	Liberal Arts	3	18.2				
Digital Sound Design	Music Tech	3	18.2				
TOTAL		16.5	100.0	100			
Recording Eng. & Mus. Production	Music Tech	9	50.0	100	Music Tech	T E R M 6	multiplying coefficient for percentile calculation = 100/18=5.5555
Recording Studio Maintenance	Music Tech	1	5.6				
Advanced Recording & Mus. Prod.	Music Tech	1	5.6				
Newtech Production	Music Tech	1	5.6				
Music Internship – Technology	Music Tech	6	33.3				
TOTAL		18	100.0	100			
Recital Attendance Semester 6	Performance	0	0.0	58	Music Tech	T E R M 7	multiplying coefficient for percentile calculation = 100/15.5=6.4516
Major Ensemble on Primary Instrument	Performance	0.5	3.2	19	Liberal Arts		
Music Technology Survey	Music Tech	3	19.4	19	Music History and Literature		
Music for Media	Music Tech	3	19.4	4	Performance		
History of Jazz/Pop Music	Music History and Literature	3	19.4				
Advanced Production for TV	Music Tech	3	19.4				
General Education Goal 10	Liberal Arts	3	19.4				
TOTAL		15.5	100.0	100			
Recital Attendance Semester 7	Performance	0	0.0	30	Music Tech	T E R M 8	multiplying coefficient for percentile calculation = 100/13.5=7.4074
Major Ensemble on Primary Instrument	Performance	0.5	3.7	22	Liberal Arts		
History of Western Art Music II	Music History and Literature	3	22.2	22	Music History and Literature		
Music Business Law and Practices	Music Business	3	22.2	22	Music Business		
Advanced Recording Techniques	Music Tech	1	7.4	4	Performance		
Sixteen Required Performances	Music Tech	0	0.0				
Stagecraft	Music Tech	3	22.2				
General Education Goal 11	Liberal Arts	3	22.2				
TOTAL		13.5	100.0	100			

Table J.3 : Northeastern University, Four-Year Music Technology Curriculum.

NAME OF THE COURSE	COURSE CATEGORY	TOTAL	% PER COURSE	ARRANGED DISTRIBUTION		TERM	Multiplying Coefficient
				TOTAL	CATEGORY		
College: An Introduction	Other	1	5.263158	27	Music Theory	T E R M 1	multiplying coefficient for percentile calculation = 100/19=5.2631
Music and Technology 1	Music Tech	4	21.05263	21	Liberal Arts		
Music Theory 1/ Musicianship 1	Music Theory	5	26.31579	21	Scientific Inquiry		
Composition Lessons	Composition	1	5.263158	21	Music Tech		
College Writing	Liberal Arts	4	21.05263	5	Composition		
Analytical Math Level 1	Scientific Inquiry	4	21.05263	5	Other		
TOTAL		19	100.0	100			
Music Theory 2/ Musicianship 2	Music Theory	5	26.31579	48	Music Theory	T E R M 2	multiplying coefficient for percentile calculation = 100/19=5.263
Music and Technology 2	Music Tech	4	21.05263	21	Music History and Literature		
Instrumentation and Notation	Music Theory	4	21.05263	21	Music Tech		
Composition Lessons	Composition	1	5.263158	5	Composition		
Principles of Music Literature	Music History and Literature	4	21.05263	5	Performance		
Music Ensemble	Performance	1	5.263158				
TOTAL		19	100.0	100			
Music Theory 3 / Musicianship 3	Music Theory	5	29.41176	29	Music Theory	T E R M 3	multiplying coefficient for percentile calculation = 100/17=5.8823
Digital Audio	Music Tech	4	23.52941	24	Music Tech		
Music Composition Seminar I	Composition	4	23.52941	24	Composition		
Historical Trad 2: Classical	Music History and Literature	3	17.64706	17	Music History and Literature		
Music Ensemble	Performance	1	5.882353	6	Performance		
TOTAL		17	100.0	100			
Music Theory 4 / Musicianship 4	Music Theory	5	29.41176	29	Music Theory	T E R M 4	multiplying coefficient for percentile calculation = 100/17=5.8823
Music Tech Elective	Music Tech	4	23.52941	24	Music Tech		
Composition Lessons	Composition	1	5.882353	24	Scientific Inquiry		
Historical Trad 1: America	Music History and Literature	3	17.64706	17	Music History and Literature		
Analytical Math Level 2	Scientific Inquiry	4	23.52941	6	Composition		
TOTAL		17	100.0	100			
Music Analysis Seminar	Music Theory	4	25	25	Music Theory	T E R M 5	multiplying coefficient for percentile calculation = 100/16= 6.25
Sound Design	Music Tech	4	25	25	Music Tech		
Music Composition Seminar II	Composition	4	25	25	Composition		
History of Electronic Music	Music History and Literature	4	25	25	Music History and Literature		
TOTAL		16	100.0	100			
Science / Tech Level 1	Scientific Inquiry	4	23.52941	23.5	Scientific Inquiry	T E R M 6	multiplying coefficient for percentile calculation = 100/17=5.8823
Music Production for Radio and Web	Music Tech	4	23.52941	23.5	Music Tech		
Advanced Writing in the Disciplines	Liberal Arts	4	23.52941	23.5	Liberal Arts		
Composition Lessons	Composition	1	5.882353	23.5	Music History and Literature		
Historical Trad 3: World	Music History and Literature	4	23.52941	6	Composition		
TOTAL		17	100.0	100			
Interactive Real-Time Performance	Music Tech	4	25	25	Music Tech	T E R M 7	multiplying coefficient for percentile calculation = 100/16=6.25
Level 2 Elective outside the major	Other	4	25	25	Other		
Composition for Electronic Instruments	Composition	4	25	25	Composition		
Music since 1900	Music History and Literature	4	25	25	Music History and Literature		
TOTAL		16	100.0	100			
Music Tech Capstone/Senior Recital	Music Tech	4	23.52941	47	Music Business	T E R M 8	multiplying coefficient for percentile calculation = 100/17=5.8823
Social Science Level 1	Liberal Arts	4	23.52941	24	Music Tech		
Composition Lessons	Composition	1	5.882353	24	Liberal Arts		
Concert Promotion and Venue Management	Music Business	4	23.52941	5	Composition		
The Record Industry	Music Business	4	23.52941				
TOTAL		17	100.0	100			

Table J.4 : University of Miami, Four-Year Music Engineering Technology Curriculum.

NAME OF THE COURSE	COURSE CATEGORY	TOTAL	% PER COURSE	ARRANGED DISTRIBUTION		TERM	Multiplying Coefficient
				TOTAL	CATEGORY		
Music Engineering Forum	Music Tech	0	0.0	26	Performance	T E R M 1	multiplying coefficient for percentile calculation = 100/19=5.2631
Principal Instrument/Voice Forum	Performance	0	0.0	21	Scientific Inquiry		
Principal Instrument/Voice (Level A)	Performance	2	10.5	16	Music Tech		
Music Theory I	Music Theory	2	10.5	16	Liberal Arts		
Experiencing Music	Music History and Literature	2	10.5	10.5	Music Theory		
Keyboard Studies I	Performance	1	5.3	10.5	Music History and Literature		
Skills Ensemble I	Performance	1	5.3				
Major Ensemble	Performance	1	5.3				
Introduction to Music Recording	Music Tech	3	15.8				
English Composition I	Liberal Arts	3	15.8				
Calculus I	Scientific Inquiry	4	21.1				
TOTAL		19	100.0	100			
Music Engineering Forum	Music Tech	0	0.0	28	Performance	T E R M 2	multiplying coefficient for percentile calculation = 100/18=5.5555
Principal Instrument/Voice Forum	Performance	0	0.0	22	Scientific Inquiry		
Principal Instrument/Voice (Level B)	Performance	2	11.1	16.5	Liberal Arts		
Music Theory II	Music Theory	2	11.1	16.5	Engineering		
Keyboard Studies II	Performance	1	5.6	11	Music Theory		
Skills Ensemble II	Performance	1	5.6	6	Music Tech		
Major Ensemble	Performance	1	5.6				
Desktop Audio Production	Music Tech	1	5.6				
English Composition II	Liberal Arts	3	16.7				
Introduction to Programming	Engineering	3	16.7				
Calculus II	Scientific Inquiry	4	22.2				
TOTAL		18	100.0	100			
Music Engineering Forum	Music Tech	0	0.0	35	Engineering	T E R M 3	multiplying coefficient for percentile calculation = 100/17=5.8823
Principal Instrument/Voice Forum	Performance	0	0.0	29	Performance		
Principal Instrument/Voice (Level C)	Performance	2	11.8	18	Scientific Inquiry		
Music Theory III	Music Theory	2	11.8	12	Music Theory		
Keyboard Studies III	Performance	1	5.9	6	Music Tech		
Skills Ensemble III	Performance	1	5.9				
Major Ensemble	Performance	1	5.9				
Ensemble Recording Workshop I	Music Tech	1	5.9				
Audio Electronics	Engineering	3	17.6				
Electrical Circuit Theory	Engineering	3	17.6				
PHY 205 University Physics I	Scientific Inquiry	3	17.6				
TOTAL		17	100.0	100			
Music Engineering Forum	Music Tech	0	0.0	39	Engineering	T E R M 4	multiplying coefficient for percentile calculation = 100/18=5.5555
Principal Instrument/Voice Forum	Performance	0	0.0	28	Performance		
Principal Instrument/Voice (Level D)	Performance	2	11.1	22	Music Tech		
Music Theory IV	Music Theory	2	11.1	11	Music Theory		
Keyboard Studies IV	Performance	1	5.6				
Skills Ensemble IV	Performance	1	5.6				
Major Ensemble	Performance	1	5.6				
Ensemble Recording Workshop II	Music Tech	1	5.6				
Audio Postproduction	Music Tech	3	16.7				
Electronics Circuits Laboratory	Engineering	1	5.6				
Intermediate Computer Programming	Engineering	3	16.7				
Electronics I	Engineering	3	16.7				
TOTAL		18	100.0	100			
Music Engineering Forum	Music Tech	0	0.0	40	Music Tech	T E R M 5	multiplying coefficient for percentile calculation = 100/15=6.6666
Principal Instrument/Voice Forum	Performance	0	0.0	40	Engineering		
Principal Instrument/Voice (Level E)	Performance	2	13.3	20	Performance		
Major Ensemble	Performance	1	6.7				
Digital Audio I	Music Tech	3	20.0				
Recital Recording & Sound Reinforcement	Music Tech	3	20.0				
Logic Design	Engineering	3	20.0				
Advanced Computer Programming	Engineering	3	20.0				
TOTAL		15	100.0	100			
Music Engineering Forum	Music Tech	0	0.0	41	Engineering	T E R M 6	multiplying coefficient for percentile calculation = 100/17=5.8823
Principal Instrument/Voice Forum	Performance	0	0.0	23	Music Tech		
Principal Instrument/Voice (Level F)	Performance	2	11.8	18	Performance		
Major Ensemble	Performance	1	5.9	18	Music History and Literature		
Audio Design Workshop III	Music Tech	1	5.9				
Transducer Theory	Engineering	3	17.6				
Digital Audio II	Music Tech	3	17.6				
Music of the Classical, Romantic, and Modern Periods	Music History and Literature	3	17.6				
Microprocessor	Engineering	4	23.5				
TOTAL		17	100.0	100			
Music Engineering Forum	Music Tech	0	0.0	35	Music Tech	T E R M 7	multiplying coefficient for percentile calculation = 100/17=5.8823
Major Ensemble	Performance	1	5.9	18	Literature		
Acoustics	Music Tech	3	17.6	18	Liberal Arts		
Entrepreneurship for Musicians	Music Business	3	17.6	18	Music Business		
Audio Analysis & Synthesis	Music Tech	3	17.6	5.5	Performance		
MCY Elective	Music History and Literature	3	17.6	5.5	Engineering		
Digital Design Laboratory	Engineering	1	5.9				
People and Society Elective	Liberal Arts	3	17.6				
TOTAL		17	100.0	100			
Music Engineering Forum	Music Tech	0	0.0	43	Music Tech	T E R M 8	multiplying coefficient for percentile calculation = 100/14=7.1428
Major Ensemble	Performance	1	7.1	21.5	Liberal Arts		
Music Business Essentials	Music Business	3	21.4	21.5	Music Business		
Advanced Audio Signal Processing	Music Tech	3	21.4	7	Performance		
Motion Picture - Sound Design/Sound Theory	Music Tech	3	21.4	7	Engineering		
Structured Digital Design	Engineering	1	7.1				
People and Society Elective	Liberal Arts	3	21.4				
TOTAL		14	100.0	100			

Table J.5 : Birmingham City University, Four-Year Music Technology Curriculum.

NAME OF THE COURSE	COURSE CATEGORY	ECTS	% PER COURSE	ARRANGED DISTRIBUTION (%)		TERM	Multiplying Coefficient
				TOTAL	CATEGORY		
Music Industry	Music Business	15	12.5	50	Music Tech	T E R M 1	multiplying coefficient for percentile calculation = 100/120=0.8333
Music and Critical Studies	Musicology/Ethno musicology	15	12.5	25	Engineering		
Digital Audio Technology	Music Tech	30	25	12.5	Music Business		
Audio Electronics	Engineering	30	25	12.5	Musicology/Ethno musicology		
Music Technology and Sound Recording	Music Tech	30	25				
TOTAL		120	100.0	100			
Music Industry	Music Business	15	12.5	50	Music Tech	T E R M 2	multiplying coefficient for percentile calculation = 100/120=0.8333
Music and Critical Studies	Musicology/Ethno musicology	15	12.5	25	Engineering		
Digital Audio Technology	Music Tech	30	25	12.5	Music Business		
Audio Electronics	Engineering	30	25	12.5	Musicology/Ethno musicology		
Music Technology and Sound Recording	Music Tech	30	25				
TOTAL		120	100.0	100			
Media Production Management	Music Business	15	12.5	50	Music Tech	T E R M 3	multiplying coefficient for percentile calculation = 100/120=0.8333
Music and Critical Studies	Musicology/Ethno musicology	15	12.5	25	Engineering		
DSP and Networks for Music Technology	Music Tech	30	25	12.5	Music Business		
Audio Systems	Engineering	30	25	12.5	Musicology/Ethno musicology		
Music Technology and Sound Recording	Music tech	30	25				
TOTAL		120	100.0	100			
Media Production Management	Music Business	15	12.5	50	Music Tech	T E R M 4	multiplying coefficient for percentile calculation = 100/120=0.8333
Music and Critical Studies	Musicology/Ethno musicology	15	12.5	25	Engineering		
DSP and Networks for Music Technology	Music Tech	30	25	12.5	Music Business		
Audio Systems	Engineering	30	25	12.5	Musicology/Ethno musicology		
Music Technology and Sound Recording	Music tech	30	25				
TOTAL		120	100.0	100			
Interactive Music Systems	Music Tech	15	12.5	100	Music Tech	T E R M 5	multiplying coefficient for percentile calculation = 100/120=0.8333
Music and Sound for Visual Media	Music Tech	15	12.5				
Media Technology Project	Music Tech	30	25				
Acoustics and Musical Instruments	Music Tech	30	25				
Music Technology and Sound Recording	Music Tech	30	25				
TOTAL		120	100.0	100			
Interactive Music Systems	Music Tech	15	12.5	100	Music Tech	T E R M 6	multiplying coefficient for percentile calculation = 100/120=0.8333
Music and Sound for Visual Media	Music Tech	15	12.5				
Media Technology Project	Music Tech	30	25				
Acoustics and Musical Instruments	Music Tech	30	25				
Music Technology and Sound Recording	Music Tech	30	25				
TOTAL		120	100.0	100			
Work Placement	Music Tech	0	0.0	100	Music Tech	T E R M 7	
TOTAL			0.0	100			
Work Placement	Music Tech	0	0.0	100	Music Tech	T E R M 8	
TOTAL			0.0	100			

Table J.6 : University of Edinburgh, Four-Year Music Technology Curriculum.

NAME OF THE COURSE	COURSE CATEGORY	ECTS	% PER COURSE	ARRANGED DISTRIBUTION (%)		TERM	Multiplying Coefficient
				TOTAL	CATEGORY		
Inventing 1	Composition	10	14.3	57.1	Music Tech	T E R M 1	multiplying coefficient for percentile calculation = $100/70=1.4285$
Mathematical Methods 1	Scientific Inquiry	10	14.3	14.3	Composition		
Music Analysis 1	Music Theory	10	14.3	14.3	Scientific Inquiry		
Musical Acoustics	Music Tech	20	28.6	14.3	Music Theory		
Sound Recording	Music Tech	20	28.6				
TOTAL		70	100.0	100			
Listening and Musicianship 1	Music Theory	10	20.0	40	Music Tech	T E R M 2	multiplying coefficient for percentile calculation = $100/50=2$
Mathematical Methods 2	Scientific Inquiry	10	20.0	40	Music Theory		
Music 1B: Music and Technologies	Music Tech	20	40.0	20	Scientific Inquiry		
Style Studies 1	Music Theory	10	20.0				
TOTAL		50	100.0	100			
Applicable Mathematics 1	Scientific Inquiry	10	14.3	28.5	Music Tech	T E R M 3	multiplying coefficient for percentile calculation = $100/70=1.4285$
Music 2A: Music and Ideas	Musiology / Ethnomusicology	20	28.6	28.5	Music Theory		
				28.5	Musiology / Ethnomusicology		
Music 2D: Theory and Practice of Music Technology	Music Tech	20	28.6				
Style Studies 2	Music Theory	20	28.6	14.5	Scientific Inquiry		
TOTAL		70	100.0	100			
Applicable Mathematics 2	Scientific Inquiry	10	20.0	40	Music Tech	T E R M 4	multiplying coefficient for percentile calculation = $100/50=2$
Electronics 1	Engineering	20	40.0	40	Engineering		
Creative Music Technology	Music Tech	20	40.0	20	Scientific Inquiry		
TOTAL		50	100.0	100			
Musical Applications of Fourier Theory and Digital Signal Processing	Music Tech	20	33.3	100	Music Tech	T E R M 5	multiplying coefficient for percentile calculation = $100/60=1.6666$
Computer Programming for Music Technology	Music Tech	20	33.3				
Real-time Computer Systems for Music	Music Tech	20	33.3				
TOTAL		60	100.0	100			
AC and Signal Processing	Music Tech	20	33.3	67	Music Tech	T E R M 6	multiplying coefficient for percentile calculation = $100/60=1.6666$
				33	Musiology / Ethnomusicology		
Musical Instruments	Music Tech	20	33.3				
Traditional Song - Gaelic	Musiology / Ethnomusicology	20	33.3				
TOTAL		60	100.0	100			
Music Technology Project	Music Tech	40	66.7	67	Music Tech	T E R M 7	multiplying coefficient for percentile calculation = $100/60=1.6666$
Research Methods in Music	Musiology / Ethnomusicology	20	33.3	33	Musiology / Ethnomusicology		
TOTAL		60	100.0	33			
Electroacoustic Composition	Composition	40	66.7	67	Composition	T E R M 8	multiplying coefficient for percentile calculation = $100/60=1.6666$
Special History in Music: Film Music Post-1950	Music History and Literature	20	33.3	33	Music History and Literature		
TOTAL		60	100.0	33			

APPENDIX K: Changes in Foreign Music Technology Curriculums after 2012

Table K.1 : The allocated credits as percentages per course category before and after 2012, NYU Music Technology Curriculum.

NYU, Music Technology Curriculum Changes			
COURSE CATEGORY	ALLOCATION BEFORE 2012 (%)	ALLOCATION AFTER 2012(%)	AMOUNT OF CHANGE (%)
Music Tech.	43	43	0
Music Business	2	2	0
Scientific Inquiry	8	8	0
Liberal Arts	23	23	0
Music History and Literature	6	6	0
Music Theory	9	13	4
Performance	6	4	-2
Other	3	1	-2

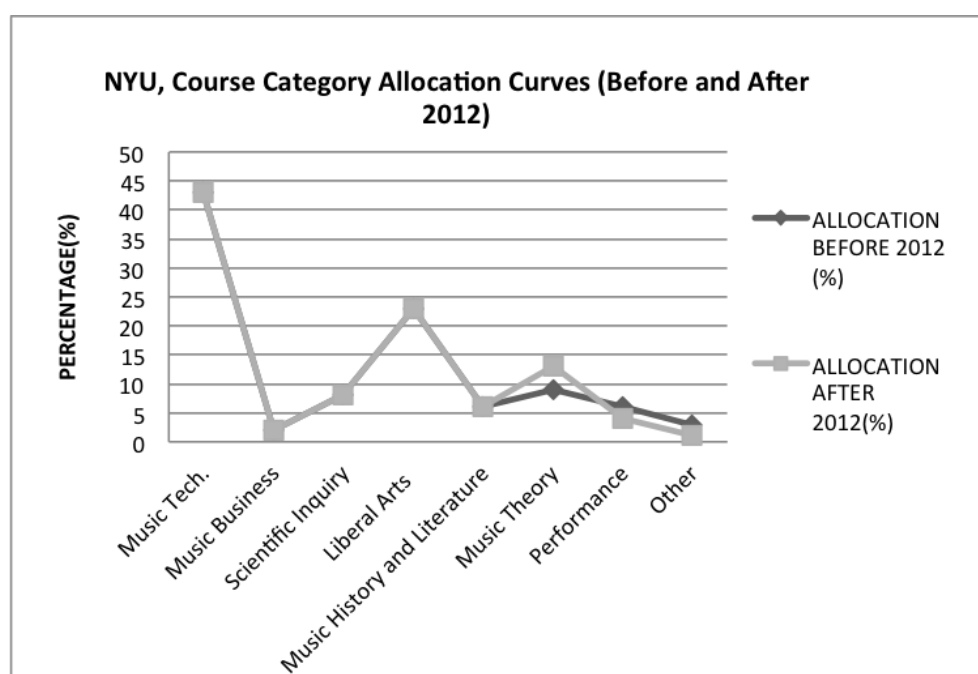


Figure K.1 : NYU, Course Category Allocation Curves (Before and After 2012).

Table K.2 : The allocated credits as percentages per course category before and after 2012, University of Miami, Music Engineering Technology Curriculum.

University of Miami, Music Engineering Technology Curriculum Changes			
COURSE CATEGORY	ALLOCATION BEFORE 2012 (%)	ALLOCATION AFTER 2012(%)	AMOUNT OF CHANGE (%)
Music Tech.	24	31.5	7.5
Engineering	23	23.5	0.5
Performance	20	16	-4
Liberal Arts	9	11.8	2.8
Scientific Inquiry	8	7.5	-0.5
Music History and Literature	6	1.4	-4.6
Music Business	5	2.6	-2.4
Music Theory	5	5.7	0.7

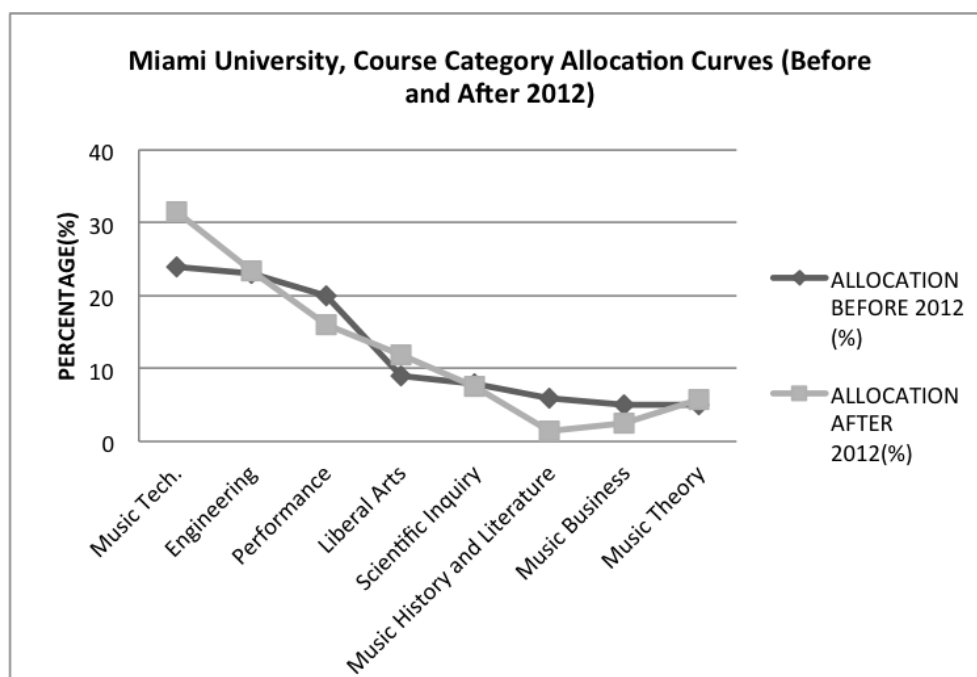


Figure K.2 : University of Miami, Course Category Allocation Curves (Before and After 2012).

Table K.3 : The allocated credits as percentages per course category before and after 2012, Birmingham City University, Music Technology Curriculum.

Birmingham City University, Music Technology Curriculum Changes			
COURSE CATEGORY	ALLOCATION BEFORE 2012 (%)	ALLOCATION AFTER 2012(%)	AMOUNT OF CHANGE (%)
Music Tech.	75	70.9	-4.1
Engineering	13	12.5	-0.5
Musicology/ Ethnomusicology	6	8.3	2.3
Music Business	6	8.3	2.3

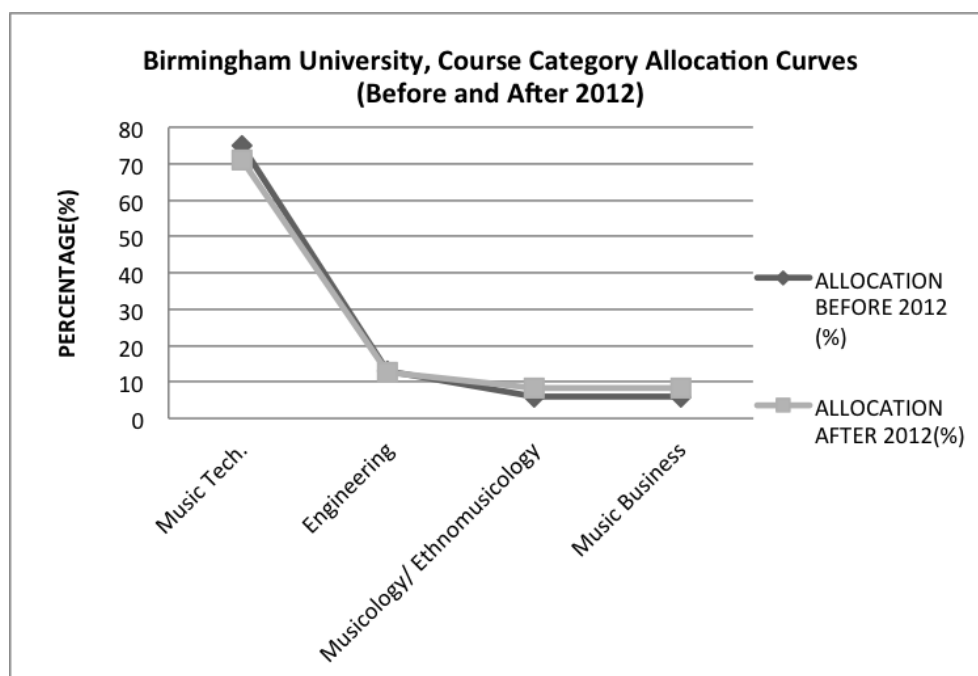


Figure K.3: Birmingham City University, Course Category Allocation Curves (Before and After 2012).

APPENDIX L: Occupations, Areas and Professions in Music Technology

Table L.1: Occupations, Areas and Professions in Music Technology.

Producer / Supervisor	MUSIC INDUSTRY & BUSINESS	Boom Operator	MEDIA, FILM AND POST PRODUCTION	Game Sound Designer	GAME INDUSTRY, SOFTWARE & TECHNOLOGY DEVELOPMENT
Production Assistant		Field Recordist		Audio Lead / Director	
Record Company Owner/ Staff		Dialog/ Voiceover/ Dubbing Engineer		Audio Programmer	
Music Editor (Music Publishing)		Foley Engineer		Audio Tester	
Copyright/Licensing Administrator		Mixing Engineer		Audio Tool Developer	
Artist & Repertoire Representative/ Administrator		Mastering Engineer		Composer	
Artist Relations Representative		Film/ Video Sound Designer		MIDI Pre-Producer	
Digital Marketing Manager		Composer		Arranger	
Studio Manager/ Owner		Jingle Writer		Music / Sound Software Developer	
Product/ Sales Representative/ Customer Service		Arranger		Web Audio Developer	
Acoustic Consultant		Songwriter/Lyricist		Audio Hardware Design & Development	
Studio Designer		Multimedia Developer		Audio Consultant	
Events Setup Worker	LIVE SOUND, CONCERT, EVENTS AND INSTALLATIONS	Recording Engineer	MUSIC PRODUCTION IN STUDIO	Researcher	EDUCATION
Event Management Staff		Assistant Engineer		Instructor	
Acoustic Consultant		Mixing Engineer			
Front-of-House (FOH) Engineer		Mastering Engineer			
Monitor Engineer		Digital Audio Editor			
Roadie		Studio Setup Worker			
Venue Sound Technician/ Maintenance		Studio Technician / Maintenance			
Location Recordist		Composer			
Performer		Arranger			
Artist		Songwriter/Lyricist			
Curator		Studio Musician			

APPENDIX M: Modular Music Technology Curriculum Design Schemes

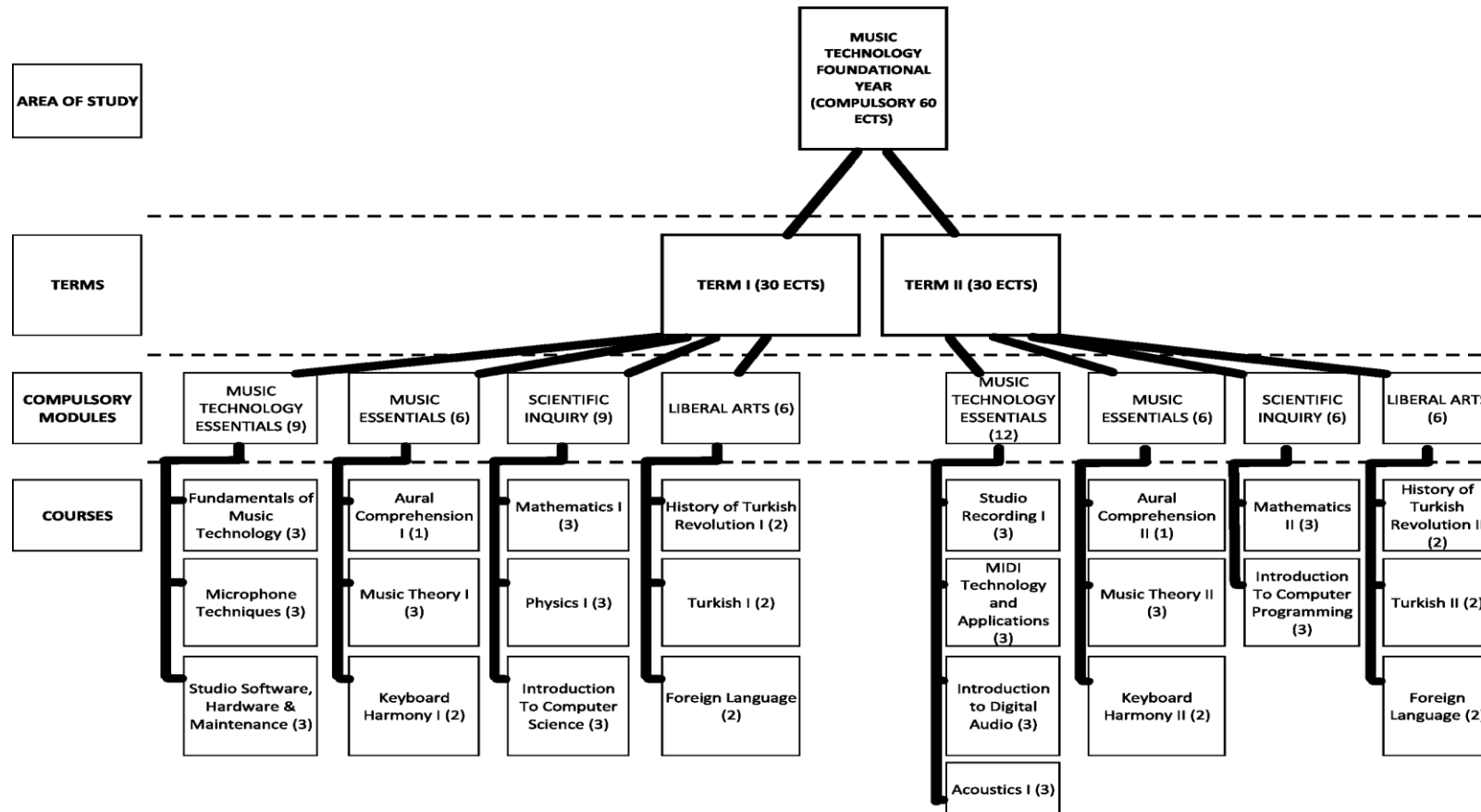


Figure M.1 : Modular Music Technology Curriculum Design Scheme, Foundation Year (Year I).

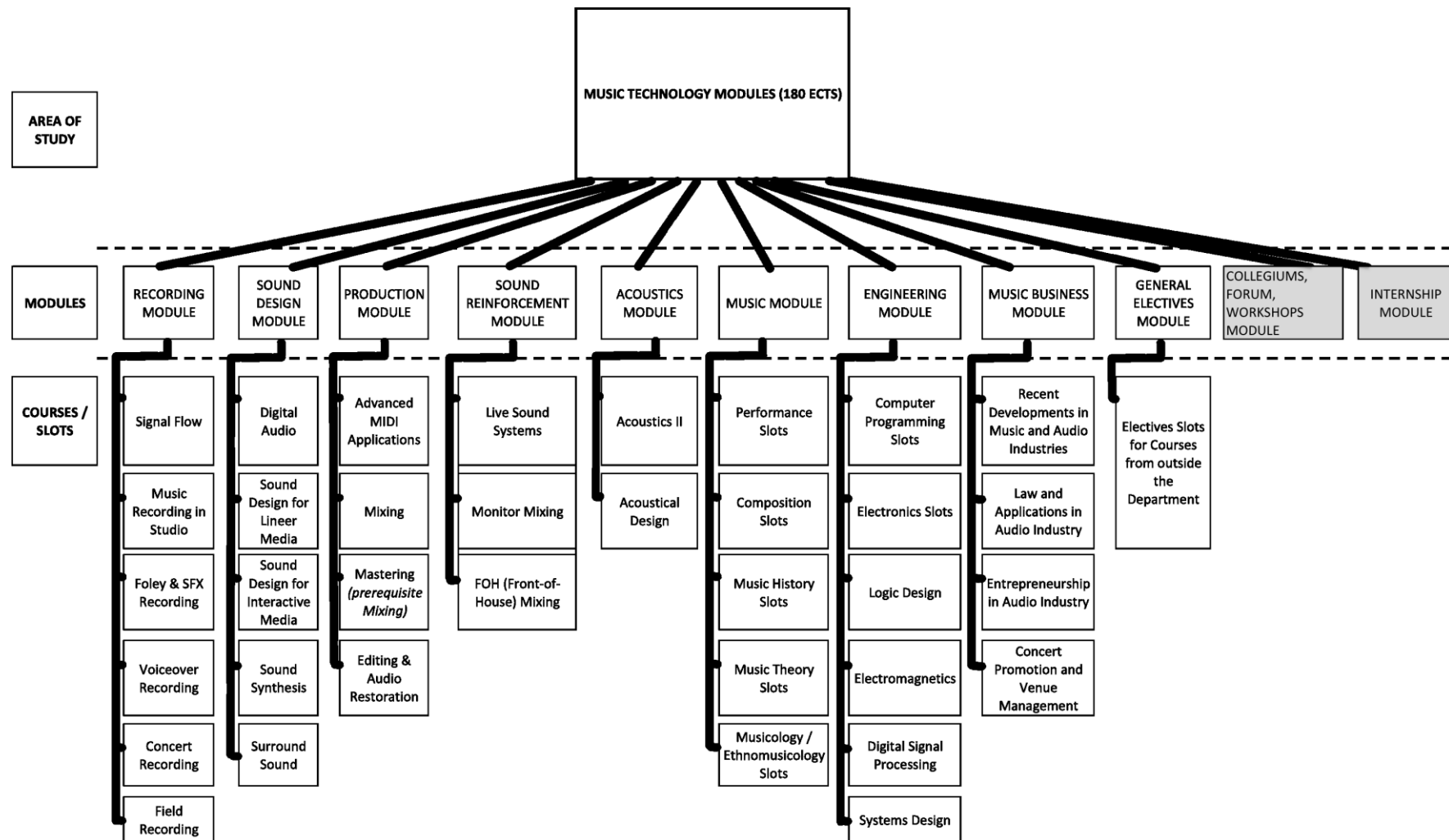


Figure M.2 : Modular Music Technology Design Scheme, Years Following Foundation Year.

CURRICULUM VITAE



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B.A.: Dokuz Eylül University, Faculty of Business
Administration, Department of International Relations,
1999.

M.A.: Istanbul Technical University, Graduate School of Arts
and Sciences, MIAM Center for Advanced Studies in
Music, Music Programme 2003.

Professional Experience:

..... – 2012: Kuka Yazılım Teknoloji Prod. Org. ve Eğitim San. Tic. Ltd. Şti. Co-
Founder / Project Manager.

2014 – 2006: Istanbul Bilgi University, Department of Music, Research Assistant.

2006 – 2005: Studio Productions Ltd. Şti., Sound Engineer.

2002 : Alarko Holding Tourism Group, Hillside Beach Club. Mini Club
Manager

2002 – 2001: MNG Holding Tourism Group, WOW Topkapi Palace Hotel, Mini
Club Coordinator.

List of Publications:

- **Yurdakul O.** (2010). What Sound and Music represent in Computer and Console Games [Abstract]. *Proceedings of International Symposium of Representation in Music & Musical Representation Symposium Abstracts*. Istanbul, Turkey: Istanbul Technical University, Turkish Music State Conservatory, Department of Musicology.

- **Yurdakul, O.** (2011). Bilgisayar ve Konsol Oyunlarında Ses ve Müziğin Temsil Ettikleri. *Porte Akademik Journal of Music and Dance Research*, 1(2), 332-337.

Presentations:

- Arapgirlioğlu H., **Yurdakul, O.** (2010). Az Gelişmiş Bölgelerimizde Üniversite-Sivil Örgüt işbirliği ile Yapılabilecek uygulamalar ve “Dersimiz Müzik” Örneği. *New Therapy Approaches in Countering the Negative Effects of Terrorism: "Music Therapy Against the Negative Effects of Terrorism*. Paper presented at NATO Advanced Research Workshop, Bilkent University, Ankara, 14-16 September.

Projects and Rewards:

April, 2014 : “Rhythmovation Interactive Floor Projection” Projesi ile BNP Paribas & TEB Annual Innovation Awards – TEB Akıl Fikir Bululması, İcat Çıkar Yarışması 4th place, Finalist Award.

October, 2013 : ‘Report of Achievement and Success of R&D Project funded within 2012 Teknogirişim Sermaye Desteği program’ issued by the Ministry of Science, Industry and Technology of Republic of Turkey.

May, 2012 : “Okul Öncesi Çağındaki ve/veya Özel Eğitim Gerektiren Çocukların Müzik Eğitimine Yönelik, Doğal Kullanıcı Ara Yüzüne Sahip Eğitici-eğlendirici Yeni Bir Yazılım Geliştirilmesi ve Sistem Oluşturulması”. Research and Development (R&D) Project funded within 2012 Teknogirişim Sermaye Desteği program by the Ministry of Science, Industry and Technology of Republic of Turkey.

January, 2011: “iBee” mobil oyunu ile Global Game Jam 2011 Turkey, 3rd place, ODTÜ Teknokent and ODTU Informatics Institute.

2010 : “Dersimiz Müzik” Project Consultant and Instructor.

Published Software:

Yurdakul, O.(2014) Dance With Santa AR (Version 1.0) [Mobile application software]. Available from <https://itunes.apple.com/us/app/dance-with-santa-ar/id951074528?mt=8&uo=4> and <https://play.google.com/store/apps/details?id=com.kuka.DanceWithSantaAR&hl=tr>

Yurdakul, O.(2014) Spooky AR Halloween Sounds (Version 1.0) [Mobile application software]. Available from <https://itunes.apple.com/us/app/spooky-ar-halloween-sounds/id931200806?mt=8&uo=4> and <https://play.google.com/store/apps/details?id=com.ARPrintables.SpookyARHalloweenSpookyAR&hl=tr>.

Published Music and Sound for Mobile Application Software:

Yurdakul, O., Deger,E. (2012) Nanbazu [Music and Sound Design for Mobile application software]. Available from <https://itunes.apple.com/us/app/nanbazu/id491684142?mt=8>

Yurdakul, O.(2011) Corridor Fly [Music and Sound Design for Mobile application software]. Available from <https://itunes.apple.com/us/app/corridor-fly/id464084311?mt=8&uo=4>

Yurdakul, O.(2011) Santa Bee [Music and Sound Design for Mobile application software]. Available from <https://itunes.apple.com/us/app/santa-bee/id487074145?mt=8>

Compositions in Concerts:

Yurdakul, O. (2008). Choomej [Electroacoustic composition]. Composition played at Clatter Electroacoustic Music Night, Bilgi University Santralistanbul Energy Museum, Istanbul, 16 April 2008.

Yurdakul, O. (2008). Choomej [Electroacoustic composition]. Composition played at Yeno Ceno 08 Music Festival, Galata Perform, Istanbul, 23 February 2008.

Yurdakul, O. (2008). The Op. [Electroacoustic composition]. Composition played at Yeno Ceno 08 Music Festival, Galata Perform, Istanbul, 23 February 2008.

Yurdakul, O. (2004). Pisces' Dolphony [Electroacoustic composition]. Composition played at CLATTER Electroacoustic Music Night, Bilgi University, Istanbul, 16 April 2008.

Yurdakul, O. (2004). Pisces' Dolphony [Electroacoustic composition]. Composition played at MIAM Electroacoustic Collective Volume I, Istanbul Technical University, MIAM, Mustafa Kemal Amfisi, Maçka, Istanbul, 8 November 2004.

Yurdakul, O. (2004). 7 Years 4 Fairy [Electroacoustic composition]. Composition played at MIAM Electroacoustic Collective Volume II, Istanbul Technical University, MIAM, Mustafa Kemal Amfisi, Maçka, Istanbul, 6 December 2004.

PUBLICATIONS/PRESENTATIONS ON THE THESIS

- Arapgirlioğlu H., **Yurdakul O.** Müzik Teknolojisi Eğitimi Veren Programların Ders İçerikleri Bakımından Değerlendirilmesi. *National Symposium – Türkiye'de Bugünden Yarına Müzik Eğitimi*, December 15-17, 2010. Istanbul, Turkey: Marmara University, Ataturk Eğitim Fakültesi.
- Arapgirlioğlu H., **Yurdakul O.** (2011). Müzik Teknolojisi Eğitimi Veren Programların Ders İçerikleri Bakımından Değerlendirilmesi. *Proceedings of 9th National Music Education Symposium – Türkiye'de Bugünden Yarına Müzik Eğitimi*, (pp. 746-757). Istanbul, Turkey: Marmara University, Ataturk Eğitim Fakültesi.

- **Yurdakul O.** (2015). Comparative Analysis Among Undergraduate Music Technology Programs in Turkish Universities. *Porte Akademik Journal of Music and Dance Research*, accepted for print.

