

UNIVERSIDADE DE SÃO PAULO

TRABALHO EM GRUPO

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## Pedagogical Project of the Course

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## Declaration of Authorship

We, Tarek Sayjari

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Noel Teixeira Kuberek, declare that this work titled, "Pedagogical Project of the Course" and the work presented in it are ours. We confirm that:

- This work was done wholly or mainly while during the discipline PEA5900 at this University.
- Where any part of this work has previously been submitted for any other work at this University or any other institution, this has been clearly stated.
- Where we have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this work is entirely our work.
- We have acknowledged all main sources of help.
- Where the work is based on work done by our self.

*"We would like to thank our professors, colleagues, wishing all the best for their future researches. We learned a lot during this discipline, in addition to know and discuss with wonderful colleagues"*

Tarek Sayjari  
Domingos Teixeira da Silva Neto  
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## *Abstract*

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### **Pedagogical Project of the Course**

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Pedagogical Project of the Course is one of the most important documents of a course. It represents its document of identity and includes all of its important identifications such as objectives, structure and methods. Some efforts were done to identify the concept of Pedagogical Project of the Course and demonstrate its importance. However, there is still a clear gap between what was achieved and what have to be done. This work reviews the concept of Pedagogical Project of the Course, demonstrating its relation with the Pedagogical Project of the Institution, as well as showing its situation in São Paulo. Our work demonstrates the components and structure, in addition to practical examples of the Pedagogical Project of the Course.

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# List of Abbreviations

<b>PPI</b>	<b>P</b> edagogical <b>P</b> roject of the Institution
<b>PPC</b>	<b>P</b> edagogical <b>P</b> roject of the Course
<b>PDI</b>	<b>I</b> nstitutional <b>D</b> evelopment <b>P</b> lan
<b>PPP</b>	<b>P</b> edagogical <b>P</b> olitical <b>P</b> roject
<b>DCN</b>	<b>N</b> ational <b>C</b> urriculum <b>G</b> uidelines
<b>LDBEN</b>	<b>E</b> ducation <b>G</b> uidelines and <b>B</b> ases <b>A</b> ct
<b>DE</b>	<b>D</b> istance <b>E</b> ducation
<b>PBL</b>	<b>P</b> roblem <b>B</b> ased <b>L</b> earning
<b>GCN</b>	<b>N</b> ational <b>C</b> urriculum <b>G</b> uidelines
<b>CREA</b>	<b>R</b> egional <b>C</b> ouncil of <b>E</b> ngineering and <b>A</b> gronomy
<b>CONFEA</b>	<b>F</b> ederal <b>C</b> ouncil of <b>E</b> ngineering and <b>A</b> gronomy

## Chapter 1

# Pedagogical Project of the Course

### 1.1 Introduction

Pedagogical project [1,2] is a general instrument that presents the purposes, conceptions and guidelines of the school's functioning, from which all other school actions originate. There is no standard of pedagogical proposal that meets all schools, because each school unit is inserted in its own context, determined by its material conditions and the set of relationships that are established within and within the social environment. Thus, each school should develop its model, the one that best expresses its identity and its commitment to the student, the community, and education.

The pedagogical project understands should have a collective construction, with the active participation of all involved (students, parents, teachers, staff, community representatives, etc.). Some aspects considered relevant in the preparation of the final document of the pedagogical project are: History and identification of the educational institution and the sponsoring entity; Guiding purposes and principles; Diagnosis and analysis of the school situation; Definition of educational objectives and goals to be achieved; Stock selection; Curricular organization; Form of administrative and pedagogical management of the school; Evaluation; Organization of school life and school arrangements; Continued training of staff; Professionals involved in the Pedagogical Proposal; and Attachments. Here, there is an important example when talking about the pedagogical projects, that is the Pedagogical Project of the Institution (PPI). PPI represents the pedagogical line that the Institution management of the Undergraduate, Postgraduate and Extension Courses of the Institution, and should be prepared by all members of the institution.

PPI should first of all present the Institution's History, trying to place it in the time and space in which it originated; increasingly demonstrating how courses were being created. The second fundamental point is to raise and present the insertion mechanisms demonstrating a study on the demands of the region and the justification of the courses offered by the institution. You also need to be concerned about the region's labor market and also a study on the graduates of the Institution. The third element of the PPI, refers to Mission - the highest goal to be achieved, guided by the philosophical principles and values that the institution has chosen to subsidize its actions.

To achieve the objectives of some institution, each course provided by it, should have a pedagogical project, which called "Pedagogical Project of the Course (PPC)"

### 1.2 Pedagogical Project classification

In general, Pedagogical Projects can be classified depending on [3]:

- Course's type: Theoretical or practical.
- The time spent at school: Half time or full time.
- The project's length: If the considered project is planned for one lesson, on week, one month, one year,...
- Number of the involved participants: It is individual or for a group of targeted participants.
- End product: If the project is for an event, workshop, course, institution,...

### 1.3 Pedagogical Project of the Course (PPC)

Pedagogical Project of the Course (PPC) [4] is the course's identity document. It defines the philosophical, political, pedagogical, administrative and technical principles that guide the human / citizen and professional formation of the graduates of the course. It consists of [1,4]: Regiment, Pedagogical Project of the institution (PPI), Institutional Development Plan (PDI) University, Pedagogical Political Project (PPP) and Rules of Procedure Teaching Center and National Curriculum Guidelines (DCN) related to each course. Meets Education Guidelines and Bases Act (LDBEN) and to what the Federal Constitution establishes in its Article 207 and deals with the inseparability and articulation between "teaching, research and as essential to the process of students that must be performed with curricular flexibility and articulation theory and practice. PPC is then, as a course ID, according to legislation, with completeness and terminality.

The human and professional formation of citizens in a world in constant and rapid change puts for the University and your Undergraduate Courses difficult to address issues. It needs the collective effort to think of the University itself in the context of its mission, future vision and values it professes, as well as (re) thinking courses with a view to build possibilities for offering courses organized, current, dynamic, socially necessary, flexible and curricular diversity and favor student protagonist. In this context, the formative academic activity embodied in the disciplinary organization of teaching and learning times and spaces require new ways of designing and composing the curriculum that go beyond unique and exclusive classroom space. Also, new approaches teaching methods and the use of diverse and maximizing methodologies of academic activities offered should be the subject of debate in the PPC preparation and / or updating processes. Classroom spaces, libraries and laboratories are no longer constitute the only spaces / times available and desirable to the development of the teaching-learning process [4]. Also the ways of organization of these spaces / times indicate some exhaustion and may be rethought, including interdisciplinary practices and / or by aggregating other methodological elements such as Distance Education (DE), Problem Based Learning (PBL), weather forecast in the time matrix for general formation and coexistence at the University, etc.

## Chapter 2

# Pedagogical Project of the Course in São Paulo

## 2.1 Introduction

This chapter discusses the situation of PPC in São Paulo. We present, demonstrate and analyze one of the surveys [5] that were done to evaluate a group of PPCs for a number of various institutions in São Paulo. Importance of this survey was that it considered various cases such as private and public institutions, as well as different levels of the education.

## 2.2 Analyze a survey about PPC's situation in São Paulo

### 2.2.1 Description

The authors in [5] discussed the education of multipurpose teachers in Brazil, intended to work in child education (preschool) and in the early grades of elementary school. This survey aims to contribute with the formulation of proposals that will improve the basic training of teachers and the learning by children, youths and adults that attend public schools providing general education.

The term “multipurpose” refers to a teacher working in the early grades of schooling, a kind of work by such professional that goes back to the origins of the so-called “normal school” of secondary level, in the late 19th century, whose purpose was to train the teacher would teach children the basic disciplines (subjects): the native Portuguese language (literacy), history, geography, science, and mathematics. This word is no longer mentioned in the Brazilian legislation associated with the issue, including the 2006 National Curriculum Guidelines (GCN) for the pedagogy course. However, the aim of educating those who will teach the above mentioned basic disciplines in the early grades remains, and in the Brazilian school reality, teachers still work as “multipurpose” professionals.

The authors of [5] expected to contribute with the assessments of the recent historical experience in Brazil, that is, education on higher level for such professionals. When the research began in 2012, the state of São Paulo had 283 pedagogy courses. However, after looking at the webpage of the institutions, the researchers found that in thirty (30) of them were not being provided. Therefore, in fact, only 253 courses were in operation.

Upon searching the curriculum grids in the websites of the institutions, the authors [5] observed that such information was not available.

Attempts to get the curriculum grids by e-mail yielded a poor response. Thus, the research sample gathered 144 curricular grids from the pedagogy courses provided

TABLE 2.1: PPC's classification depending on the administrative nature [5]

Nature	Percentage of the courses provided
Private	86.80 %
Public/Local	6.25 %
Public/State	5.56 %
Public/Federal	1.39 %

TABLE 2.2: PPC's classification depending on the academic organization [5]

Nature	Percentage of the courses provided
University	18.06 %
High Education Center	13.19 %
College	68.75 %

by both public and private institutions in the state of São Paulo. Out of them, 137 made available the list of discipline and their respective number of hours, and seven (7) made only the list of disciplines available. In order to analyze the curricular grids a instrument was devised to collect data and it had two parts, one with general data about the institution and the course provided, and the other with the categories that were defined upon the first reading of the grids.

In order to depict a possible picture of the pedagogy courses in the state of São Paulo [5], the 144 courses we investigated will be initially presented according to three categories: administrative nature, academic organization, and time to complete the course.

Regarding the administrative nature (Table 2.1), either private or public (federal, state or local level), we found that out of the total 144 courses in the study, 125 (86.8 percent) are provided by private institutions and only 19 (13.2 percent) by the public ones. Out of the latter, eight (8) are offered by state, two (2) by federal, and nine (9) by local institutions, as indicated in the Table 2.1. Regarding the academic organization of HEI – University, Higher-Education Center or College – the 144 courses are sorted out as Table 2.2 shows. Regarding the institution type (Table 2.2), there are 99 courses (69 percent) that are provided by colleges, 19 (13 percent) by higher-education centers, and 26 (18 percent) by universities. Data from the tables show that a significant majority of pedagogy courses in the state of São Paulo are provided by private institutions, adding up to 125 (86.80 percent), and by colleges and higher-education centers (118 = 82 percent), in which the practice of research is not required by the legislation. The time required to conclude the targeted courses is shown by Table 2.3.

## 2.2.2 Results and recommendations

The authors of [5] found that most of the PPCs considered by this research are not able to provide the students with the required skills and competencies, in addition to it was difficult to get the study program of the PPCs' disciplines.

The diversity of disciplines may also reveal an attempt by the institution to provide training both for the teacher in child care and for the early grades of elementary school, and as the educational manager who works in schooled and non-schooled contexts. However, emphasis is on the training of the teacher for the early grades,

TABLE 2.3: PPC's classification depending on the time required to complete the course [5]

Time to complete course in Semesters	Percentage of the courses provided
06	32.6 %
07	19.4 %
08	46.6 %
09	0.7 %
10	0.7 %

since the knowledge associated with professional teacher training (disciplinary areas) correspond to 38 percent of the disciplines, the highest index in the set of class hours within the curricular grids. Yet, we understand that this index (Knowledge associated with professional teacher training) is quite less than half the class hours, insufficient for the direct or indirect treatment of the school knowledge needed in the education that early grade students are entitled to. It is also insufficient when considering how complex teaching a child is.

On the other hand, the researchers of [5] provided some observations and ideas that could improve the situation of PPC:

- It seems necessary to discuss this issue in the context of curriculum grids that are fragmented into disciplines. It is suitable to enquire about the advancements in the curriculum area which push towards an interdisciplinary view.
- Training the teacher and the pedagogue is what has been defined for the pedagogy courses. However, considering how complex and wide are those professions, it is clear in the research data that this training is generalizing and superficial, and it does not educate (well) either the pedagogue or the teacher.
- Research results reveal a tendency in the courses investigated of focusing teacher training for the early grades to the detriment of the training to work in child care, an area that has slowly gained curricular space, since it is relatively new in higher education. The presence of disciplines associated with this level of schooling may indicate some commitment by the courses towards higher education of the professional who will work with small children, in daycare and preschools, overcoming the formative proposal of the high-school and normal school training.
- Regarding didactics in the training of pedagogues and teachers, a discipline intended to cooperate with the training of teachers on the study of teaching and learning processes taking place between the teacher and the students, what is the situation in the pedagogy courses we have analyzed? It is noted that didactics is present in only 6.64 percent of the class hours. If we agree that, as the area of pedagogy.
- The percentage of class hours associated with disciplines in this category in relation to the total class hours of the courses was 6.73 percent, sorted out as follows: 6.37 percent for the knowledge about school and only 0.36 percent for disciplines related to the management area in non-schooled contexts. These disciplines turned out to be ones least provided, although they were present in all grids analyzed.

- The enormous diversity and heterogeneousness in the names of disciplines may be explained by the disputes occurring in the field of education, tensioned by the emerging areas and which reveal to be mostly related to the possible jobs in the labor market for professional pedagogues.

As for the future researches about PPCs, the authors [5] recommends:

- Analyze what is proposed in the study program of the disciplines concerning the objectives, the contents, the formative practices and the theoretical framework.
- Through study cases, take an in-depth analysis of some pedagogical projects of the courses, which by their curricular grids turned out to be an advancement in terms of conducting a training based on interdisciplinarity and transdisciplinarity, as most of them are committed to teaching in the perspective of the multipurpose teacher.
- Proceed with the analysis of the curricular grids by sorting out the distance (online) courses and the night courses.

### **2.2.3 Our evaluation**

We think that this survey was one of few researches that addressed the issue of PPCs' situation. The authors tried to investigate the positive and negative points when talking about the situation of PPC in São Paulo, but this, in our opinion, was not sufficient. In fact, there is a clear gap between what had been achieved, and what have to be done in this context. Especially, we presents here a list of our observations and recommendations:

- We agree with the suggestions and recommendations that the authors presented.
- We think that ignoring the disciplines' plans was one of the very negative points of this research. In this context, we highly recommend to consider these plans to get a better view about the targeted PPCs.
- The authors did not contact with any part of the involved entities (teachers, students, administrative staff). This, as we think, reduces a lot the accurate of the research's results.
- Finally, we recommend to achieve other researches to investigate the situation of PPC considering all the observations mentioned before and within other fields of science, such as the engineering.

## Chapter 3

# Components and Structure of Pedagogical Project of the Course

### 3.1 Introduction

PPC must consider the set of organizational and operational guidelines that express and guide the pedagogical practice of the course, its curricular structure, the menus, the bibliography, the professional profile of the graduates and all that refers to the course development [1,6].

### 3.2 PPC's Components

PPC, in general, should contain the following components [7]:

- General objectives of the course, contextualized in relation to its institutional, political, geographical and social insertions.
- Objective conditions of offer and the vocation of the course.
- Workloads of didactic activities and course completion.
- Ways of realizing interdisciplinarity.
- Modes of integration between theory and practice.
- Forms of assessment of teaching and learning.
- Modes of integration between undergraduate and graduate, if any.
- Lato sensu postgraduate courses, in specialization modalities, integrated and / or subsequent to graduation, and improvement, according to the evolution of the sciences, technologies and the effective demands of professional performance, observing the peculiarities of each area of knowledge and of performance by course.
- Encouraging research as a necessary extension of teaching activity and as an instrument for scientific initiation.
- Conception and composition of internship activities, by course.
- Conception and composition of complementary activities.
- Provision of sequential and technology courses, as appropriate.

### 3.3 PPC's Structure

Each PPC, should have the following basic structure [7,8]:

- COVER: Must contain the name of the Institution, Center and Course. Also indicate the year.
- SUMMARY: Intended for enumerating the divisions and sections that make up the PPC. The title of each section and the page on which it starts should be placed.
- COURSE IDENTIFICATION.
- UNIVERSITY HISTORY.
- COURSE DESIGN: The conception of the course is characterized as the basic and grounded definitions (socially, institutionally and scientifically) of its justification, principles, objectives, methodological approach, egress profile etc.
- COURSE CONTEXTUALIZATION: This item should include the general characteristics and justification of the course in the social and institutional aspects. It is important to present regional quantitative data that can prove the necessity and feasibility of the course: job opportunities for the graduates; internships etc.
- It is essential to cross-check the number of vacancies expected to enter the course with other public offerings in the same region and the possibilities of job. It is important to highlight how the course dialogues with the mission [1,7,8], values, vision of the University and how it is placed in the Teaching Center and what is the expertise in the area. It is necessary to construct the proposal considering the social profile of future students, that is, it is essential to reconcile the ideal and desirable with the possible and achievable in the definition of the course duration, class schedules and applied methodologies. In other words, it hinders the consolidation of a Course whose potential and effective demand is made up of shift workers and its curriculum does not provide flexibility for such situations.
- COURSE OBJECTIVES:  
 General objective: It is important to remember that the wording of the objective should be conceptually dense and succinct, as the explanations and details will be presented in the specific objectives. It is also important to refrain from indicating "through", "through" etc, as the "how" is proper to the methodology item.  
 Specific Objectives - Due to the general objective, explicit and follow a script of similar writing, without indicating how to do it.
- METHODOLOGY: In this item [6,7,8], the concepts that define the course organization and operation should be presented. If you have a classroom course, with lectures, laboratory practices, field practices, complementary activities, practice as a curricular component etc; or if a semi-present course, at a distance, alternating etc. It is also important to indicate if the course incorporates innovative and / or differentiated practices such as PBL or part of the workload in DE (20 percent provided by law); as research and extension dialogue with methodological options for teaching etc.

- **EGRESS PROFILE:** Indicate what the citizen / professional trained in the course can do [8,9]. Which skills will you master, what professional areas can you work in, etc. It is important that in this item the DCNs of the specific area are observed and, if it is Degree, also the DCNs of Initial and Continuing Teacher Training.
- **CURRICULAR ORGANIZATION:** This section presents the curriculum design and how it will be composed.

Conception: (curriculum; Curricular flexibility - vertical / horizontal and time / space -; Course compatibility with DCNs; Taking advantage of subjects; recognition of professional knowledge, integration of areas, interdisciplinarity, teaching methodology and assessment, practice as a component). etc).

Curriculum Structure: Here it is important to indicate how the curriculum is organized: by subject, subject area, subject area, subject and / or subject blocks, activities etc [7,10].

o Curriculum Matrix: Indication of the explanatory table of the form of offer, sequence, periodization, status of the offer (if discipline, its obligatory or optional nature), etc - if activity or other), etc.

Menus and bibliographies: It is suggested that the menus be built with focus on the concepts to be worked on in the discipline and / or the skills to be developed. As for the bibliographic references it is absolutely essential to indicate at least three basic and five complementary, available in the Central and / or Sector Library.

TCC: Course Completion Paper - Indicate the conception and justification of its existence [6,11], form of accomplishment (if discipline, whether individual or group, etc.), guidance prediction (collective or individualized), deadlines (when to do, duration / time for completion), requirements, etc. Attach the CBT Rule.

Complementary activities: Explain conception, justification, as proposed in the proposed curriculum, operationalization and regulation (amount of hours, when to perform, accepted activities, etc.). It is necessary to attach the Complementary Activities Rule.

- **COURSE RESEARCH AND EXTENSION:** With regard to research it is important to seek to understand it beyond an activity performed at the scientific initiation level. Building the understanding that the classroom is characterized as a space that fosters research in the process of rigorous search for knowledge is fundamental for PPC to make research an intentional instrument in the education of all students.
- **COURSE SELF-ASSESSMENT:** Evaluation of both the PPC implementation process and its further development is absolutely necessary to be foreseen as a specific PPC item. Remember that the self-assessment of the course is provided for in the Law of Sinaes (No. 10.861 / 2004) and is a mandatory item required by the regulation of the system. It is essential to inform in PPC the forms / procedures, instruments, subjects (people / instances) involved, frequency and follow-up responsibilities as self-assessment.
- **STUDENT MONITORING AND SUPPORT:** Student support and support services are planned to be developed by the institution and the responsibilities the Board shares with various institutional levels. However, the PPC should

indicate all actions as it is from explanations such as this one can understand how much certain PPC dialogues with PPI, PDI, Regiment, University Statute and complies with the PNE.

- REGULATION FOR COMPULSORY AND NON-COMPULSORY STAGE
- REGULATION FOR ADDITIONAL ACTIVITIES o Complementary activities are characterized as enrichment activities chosen by the student and completed throughout the course. They are accounted for as workload for completing the course, but not defined as offer in specific periods in the curriculum.
- STANDARDS FOR GENERAL AND SPECIFIC TRAINING LABORATORIES: Present rules for laboratory use, from defining who uses, when and how they use it, to material and personnel supports.
- ACADEMIC ADMINISTRATION: The academic management of the Undergraduate Course must be based on the University Statute and Rules of Procedure.
- TEACHER BODY:  
Teaching Profile: to present the faculty that teaches for the Course, its main characteristics of formation and professional experience.  
Continuing teacher education: clarifying the University's regulations for continuing education.
- INFRASTRUCTURE:  
Campus general facilities and spaces used by the course and those made available to the common coexistence of students (UK, library, planetarium, cinema, theater, museums, etc). Accessibility for people with special educational needs Report access ramps; service of translators; preparation and adaptation of instructional materials etc; machines / printers (Braille; pounds) etc.  
Required course facilities Explain here the requirements for the course offering e. Library and General and Specific Collection List. Particular attention is paid to the basic and complementary references that are listed in the subject menus. What's on the menu needs to be in the library's collection.  
General Training Laboratories List and specify what you have and how it works.
- OBSERVATIONS: Present in this space additional information deemed relevant to the course offer and not included in the previous items.

## Chapter 4

# Practical examples of Pedagogical Project of the Course

### 4.1 Introduction

Considering the types, elements, components and structure of PPC mentioned before, we provide here some practical examples and characteristics [12,13,14] of PPC's. Due to the notoriety in society that USP and Mackenzie have, and how they are representative in the context of technological production, this section will analyze two PPCs from the Electrical Engineering courses of both universities. In the following, we will explore PPC's features of two universities.

### 4.2 PPC of Polytechnic school of University of São Paulo

The Polytechnic School was created from a manufacturing perspective in 1893, prior to the creation of USP, and then added as it currently stands. With a total of 17 engineering courses including electrical engineering which was separated from mechanical engineering in 1980. Subsequently with social demands, USP institutionalized some values to be achieved as an educational, research and extension institution [12,13].

These values are in agreement with a society that seeks improvements. Examples of these values are: the systematization of historical knowledge; the construction of new knowledge; the training of engineers with different qualifications; the integral development of the student, graduation based on continuing education.

In addition to the values to be achieved, the USP Polytechnic School [12,13] has a mission and vision to be fulfilled. Its mission is to prepare professionals with competence and technologically leading the quality of life of society, thus aiming to make the school itself a world-class reference. For the mission of the Polytechnic School to be fulfilled, a curriculum structure needs to be set up. Under these conditions, the USP Polytechnic School currently works with a curricular structure that includes many types of engineering qualifications. This curriculum is designed by the PPC's of engineering courses that share the same Common Core core disciplines.

The Common Core is responsible for solid knowledge of the basic concepts. Engineering can also promote interaction between students of different engineering, since students from different courses are randomly distributed. In this way, the student of a course coexists with other students thus collaborating with a global formation. It is noteworthy that the Common Core covers Curriculum Components of mathematics, physics and computing. In this perspective, PPC of the Polytechnic

School comes in accordance with the Resolution of the National Council of Education, as well as those of the Federal Council of Engineering and Agronomy CONFEA. These bodies bring activities, skills and characterization of the performance of the engineering professional. To this end, it is established that every engineering course must have a curriculum that includes 30 percent of the basic course content of the minimum workload. For the core of professional content, at least 15 percent of the minimum workload and a core of specific content are used.

Already the PPC of the Electrical Engineering course of the Polytechnic School specifies that in the first three years of the course, the contents are common to all students, and after the third year, the student will opt for emphases such as: Energy and Electrical Automation, Telecommunications, Automation and Control, Electronic Systems and Computing. PPC of the Polytechnic School's Electrical Engineering course

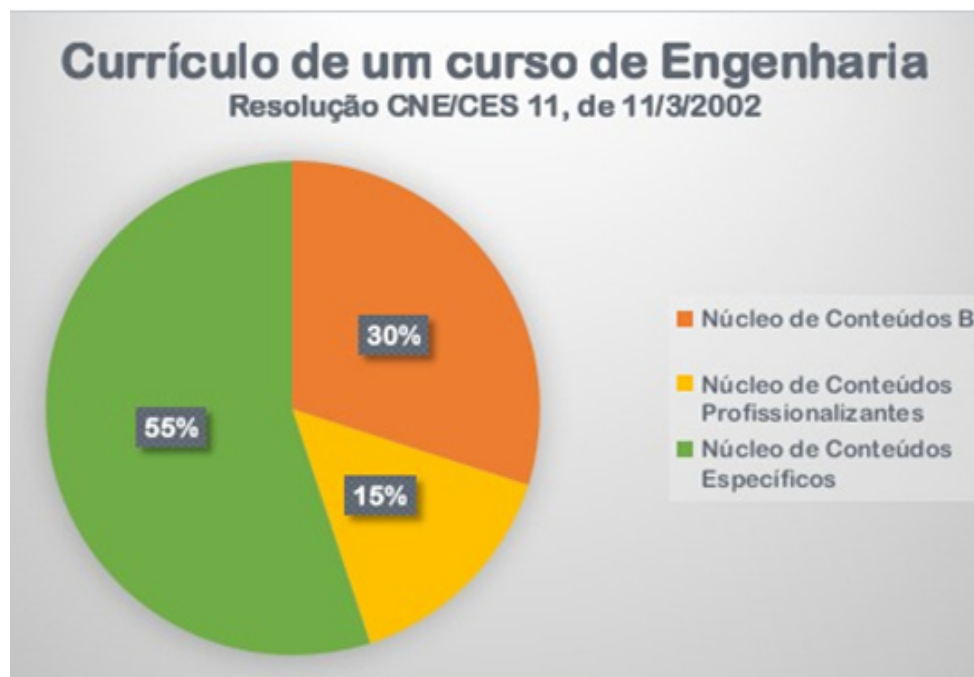


FIGURE 4.1: Distribution of the Electrical Engineering course at USP Polytechnic School. Obeying the aforementioned Resolution, the Common Core subjects correspond to 27.5 percent of the minimum defined workload [12,13]

also reports that regardless of the emphasis chosen, until the third year, which corresponds to the subjects of the common basic grid (Common CoreEngineering) and the engineering sciences (Common CoreEngineeringEngineering) all students share the same subjects. Still the PPC of the aforementioned institution, he states that the Common Core Engineering assists students on the options of emphases. In this Center are studied subjects such as Energy, Environment and Sustainability; Materials Science, General Technological Chemistry, Introduction to Electrical Engineering, Laboratory and Programming Algorithms and Data, Electrical Circuits, Analog and Digital Electronics, Digital Logic Design, Electromagnetism, Waves and Lines, Systems and Signals, Controls, Electromechanical Energy Conversion, Transport Phenomena, Introduction to Structures, and Thermodynamics.

In addition to the curriculum components, PPC also reports the library of Electrical Engineering of the USP Polytechnic School [12]. Figure 4.1 shows the distribution

of the Electrical Engineering course at USP Polytechnic School [12,13].

The methodology is also reported in the PPC, in that they are divided into three activities: conventional activities, complementary activities and supervised internship. The conventional activities in PPC are the lectures and dialogues, class work and laboratories. The complementary ones relate academic programs such as scientific initiation. And finally the supervised internship that PPC recommends from 20 to 30 hours per week

Infrastructure from the PPC perspective refers to the physical part of the institution that promotes services. In the PPC of the Electrical Engineering course is informed about the physical elements found in the institution.

USP PPC also provides a description of each course teacher. Regarding the forms of assessment, it is reported that the Polytechnic has three axes that are: survey of the performance of students in the subjects, survey of the opinion of students and survey of the opinion of graduates. This evaluation enables a continuous evaluation of the discipline offering, allowing corrections to provide the fulfillment of the pedagogical proposal. Regarding the objectives of the course, the PPC of the Electrical Engineering course of the Polytechnic School, explains that the intention is the formation of an engineer as an agent of transformation of society. technologies for the energy sector.

With a history dating from the nineteenth century, with the activities of a Calvinist American missionary couple in Sao Paulo. As early as 1890, John Theron Mackenzie [14] made the construction of the Higher Engineering School feasible with a cash donation. In the year 1896, he started working on the Engineering School, designed and directed by the engineers of the General Electric who moved to São Paulo for this purpose.

### 4.3 PPC of Mackenzie Presbyterian University

The course that addressed the skills of an electrical professional began in 1917 with the course of Mechanical-Electrical Engineer. Subsequently the course was divided according to market needs, so the first class of Electrical Engineers graduated in 1936.

Currently, as the electrical engineering course PPC states, Mackenzie Presbyterian University [14] has the following emphases: Electronics, Automation and Telecommunications, Power Systems, Energy and Automation. Mackenzie University still has a strong religious content, since the PPC has advocated the purpose of educating man in the image and likeness of God. Thus, as the PPC reports, it will make the University recognized as an institution committed to human, religious and scientific actions. Figure 4.2 demonstrates the distribution of the Electrical Engineering courses at Mackenzie Presbyterian University. We can observe that the curriculum is comprised of basic Curricular (139.33 hours), Vocational (1504.17 hours), and Specific (395.83 hours) components. In the basic curriculum components, the student studies the contents of physics and calculus necessary to learn the following components. The professionalizing components are common and the different emphases, while the professionalizing cut out the individual choice of each student. It is noteworthy that the three Curriculum components together form a total workload of 3325 hours, dedicated to all subjects. Of this amount of hours, 2264 hours are theoretical and 1061 hours are practical classes. Not to mention the workload required in the curriculum components, the student must complete at least 108 hours in the preparation of the TCC, 240 hours of mandatory internship, 320

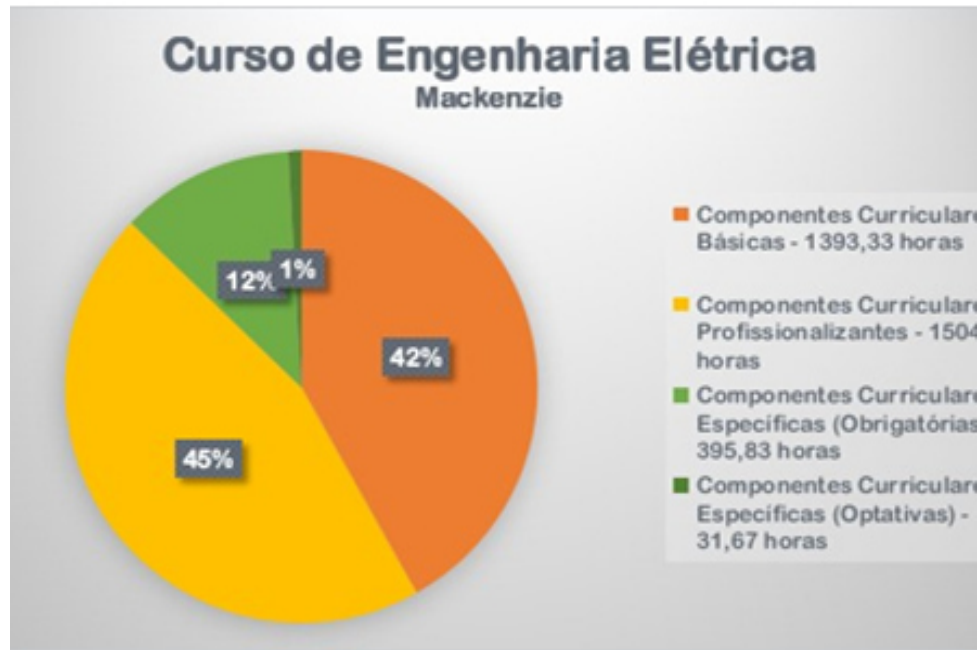


FIGURE 4.2: Distribution of the Electrical Engineering course at Mackenzie Presbyterian University [14]

hours of complementary activities and 160 hours of supervised activities. The minimum workload is 4153 hours, and the term of completion is 10 semesters. PPC also speaks of the space at the Mackenzie Presbyterian University library, which offers many copies in a physical space of 540 square meters. The library also has a digital system called "Pergamum". PPC addresses the methodological activities that are divided into: conventional, complementary and supervised internship activities. The conventional activities are dialogued and expository classes. Complementary activities include academic programs. Finally the supervised internship that aims to add practical knowledge to students and can be done in its entirety. About teachers, the PPC at Presbyterian University Mackenzie broadly describes their profile. Given the importance of course evaluation as a way of pointing out the reality of Electrical Engineering at Mackenzie Presbyterian University, there is a committee responsible for diagnosing the course. Evaluations include teachers, staff. PPC also describes the objectives of the Electrical Engineering course at Mackenzie Presbyterian University. The objectives that guide the Electrical Engineering course at the Presbyterian University are focused on religious and entrepreneurial content. Under these conditions, the profile of the electrical engineer graduated Electrical Engineering from the Presbyterian University is generalist and focused on entrepreneurship, ie the engineer is able to set up his own business.

#### 4.4 What is missing from PPC?

After analyzing examples of PPC, it is important to report some observations of what is missing [15,16] of it. Thus, the following missings were identified by evaluation of PPCs for the Electrical Engineering course of USP and Mackenzie Polytechnic: nothing that refers to the student's egress profile, basic methodologies or even their

implementation. Universities are moving to become more plural and democratic space as many students from different levels of economic backgrounds welcome them. However, in the PPC's of the two institutions analyzed, nothing was said about this. As well, the PPCs do not report how they would make a study of economic profile of students, after all is not only the receipt of students, but how they will sustain themselves during their education. Therefore, PPC should propose social survey studies and do something the scholarships and public policies for social redress. Another perceived shortcoming in the PPCs is the absence of a study on associating learning with the knowledge that students once accumulated over the course of their lives. Taking into account that the engineering is done by solving problems, the analyzed PPCs' did not talk about it. It is important to note that PPCs also did not report on basic teaching and learning methodologies, nor report anything about the student-teacher relationship. Although the freedom of the teacher in the management of classes is paramount, PPC should be a reference source for the preparation of classes and the relationship of the subjects. The world is becoming more modern thanks to technological adventures. However the studied PPCs' did not address which technologies will be used and whether they include the inclusion of distance education platforms.

## **4.5 Professional attribution**

It was observed that the professional attribution [17] is given in the PPCs from the point of view of how it aims to train engineers. For this reason, the training established in the PPCs comes in accordance with the text of PPCs and the professional emphases intended in this document. The professional attribution will be in convergence with the CREA and CONFEA standards. Under these conditions, PPCs only reaffirms that already stated by the engineering councils.

## Chapter 5

# Conclusion

This work reviewed the concept of “Pedagogical Project of the Course”, presenting its components, structure, examples, in addition to its situation in São Paulo. It was clear that PPC is one of the most important documents that identifies the course, and without it, will be very difficult to expect that the education process will success. However, we noticed that most of the considered PPCs were not complete. In a lot of cases, they suffered from missing of some important information. We argue that still there is a clear gap between what had been achieved, and what have to be done. Thus, a lot of efforts must be done in this context. Our work provided a list of observations and recommendations that could help to improve the PPC. As future work, we think that surveys demonstrate the situation of the PPCs in the different fields of science, considering the plans of the involved disciplines, could improve a lot the education process.

# References

- [1] DIRETRIZES PARA ELABORAÇÃO DE PROJETO PEDAGÓGICO DE CURSO – PPC (Versão Preliminar), Universidade Federal do Espírito Santo (UFES), (2016).
- [2] Simoes, Sonia Pires. "O projeto pedagógico institucional e projeto pedagógico do curso." *Acesso em 4* (2012).
- [3] Mária Fűz-Kószó and Klára Szabó. Learning It by Doing: Project-based Learning. *TÁMOP-4.1.2.B.2-13/1-0008 projekt*, 2013.
- [4] Silva, Lenir Maristela, Francéli Brizolla, and Luiz Everson da Silva. "Projeto pedagógico do curso de licenciatura em Ciências da UFPR Litoral: desafios e possibilidades para uma formação emancipatória." *Revista Brasileira de Estudos Pedagógicos* 94.237 (2013).
- [5] Pimenta, Selma Garrido, et al. "Teacher education courses (Pedagogy): weaknesses in the basic training of a teacher." *Educação e Pesquisa* 43.1 (2017): 15-30.
- [6] Luciana Montanari, Alessandro Mattedi. DESENHO DO PROJETO PEDAGÓGICO DE CURSO.
- [7] Seixas, Pablo Sousa, et al. "Projeto Pedagógico de Curso e formação do psicólogo: uma proposta de análise." *Psicologia Escolar e Educacional* 17.1 (2013): 113-122.
- [8] NÓBREGA-THERRIEN, Silvia Maria et al. Political Pedagogical Project: conception, construction and evaluation in nursing. *Revista da Escola de Enfermagem da USP*, v. 44, n. 3, p. 679-686, 2010.
- [9] MAYHEW, Matthew J.; KING, Patricia. How curricular content and pedagogical strategies affect moral reasoning development in college students. *Journal of Moral Education*, v. 37, n. 1, p. 17-40, 2008.
- [10] BLEIMANN, Udo. Atlantis University: a new pedagogical approach beyond e-learning. *Campus-Wide information systems*, v. 21, n. 5, p. 191-195, 2004.
- [11] GOVINDASAMY, Thavamalar. Successful implementation of e-learning: Pedagogical considerations. *The internet and higher education*, v. 4, n. 3-4, p. 287-299, 2001.
- [12] L. Lebensztajn, L. N. Rossi, M. A. Saidel, N. Kagan, R. M. Monaro, S. L. Pereira, S. I. Nabeta, V. C. Silva, W. Kaiser, and W. Komatsu, "Projeto político pedagógico de engenharia elétrica da escola politécnica da usp," p. 71. 3.

[13] Bibliotecas escola politécnica. [Online]. Available: <http://www.poli.usp.br/bibliotecas.html> 12.

[14] B. G. A. Neto, "Projeto pedagógico de curso de engenharia elétrica da universidade presbiteriana Mackenzie," p. 209. 3, 2018.

[15] R. L. L. e. S. Filho and C. Bastos. Demanda pela engenharia precisa ser acompanhada pelo número de formados. [Online]. Available: <http://jornal.usp.br/artigos/demanda-pela-engenharia-precisa-ser-acompanhada-pelo-numero-de-formados/> 1.

[16] Documentação do departamento acadêmico de engenharia elétrica. [Online]. Available: <http://www.eletrica.unir.br/arquivo> 3.

[17] Diário Oficial da União. FUNDAÇÃO JORGE DUPRAT FIGUEIREDO, DE SEGURANÇA E MEDICINA DO TRABALHO, Secao 1, p. 43, ISSN: 1677-7042, 26/04/2019.

# **Appendix:**

**Diário Oficial da União. Secao 1, p. 43, ISSN: 1677-7042, 26/04/2019**

FUNDAÇÃO JORGE DUPRAT FIGUEIREDO, DE SEGURANÇA E MEDICINA DO TRABALHO

PORTARIA Nº 189, DE 24 DE ABRIL DE 2019

O PRESIDENTE EM EXERCÍCIO DA FUNDAÇÃO JORGE DUPRAT FIGUEIREDO DE SEGURANÇA E MEDICINA DO TRABALHO, no uso das atribuições que lhe foram conferidas pelo art. 15º do Estatuto aprovado pelo Decreto nº 4.663, de 2 de abril de 2003, e CONSIDERANDO o disposto no artigo 19-E da Lei nº 11.344 de 8 de setembro de 2006, incluído pela Lei 11.907 de 2 de fevereiro de 2009;

CONSIDERANDO o disposto no §2º do artigo 5º do Decreto 7.133 de 19 de março de 2010;

CONSIDERANDO o disposto no §2º do artigo 6º da Portaria Interministerial MP/MCTI nº 428 de setembro de 2012;

CONSIDERANDO o disposto na Portaria nº 97 de 22 de maio de 2015;

CONSIDERANDO o constante dos autos do processo nº 47648.000360/2019-88;

resolve:

Art.1º- Fixa as metas globais para o quarto ciclo de avaliação de desempenho referente ao período de 1º de março de 2019 a 28 de fevereiro de 2020 para fins de apuração da Gratificação de Desempenho de Atividade de Ciência e Tecnologia (GDACT).

FRANCISCO ROGERIO LIMA DA SILVA

ANEXO

Metas Globais da área técnica para Avaliação de Desempenho - 4º Ciclo.

Descrição das Metas Globais	Valor Numérico a ser Atingido no Final do Período de Avaliação	Unidade de Medida
Alcançar 1,5 milhão de pessoas por meio de ações de educação e de difusão de conhecimentos técnicos e científicos para o desenvolvimento da cultura de prevenção em segurança e saúde no trabalho	1.500.000	Pessoas alcançadas
Desenvolver e publicar 40 estudos e pesquisas visando à melhoria das condições de trabalho e proposição de políticas públicas de prevenção em segurança e saúde no trabalho	40	Estudos e pesquisas publicados

Metas Globais da Área de Gestão para Avaliação de Desempenho - 4º Ciclo.

Descrição das Metas Globais	Valor Numérico a ser Atingido no Final do Período de Avaliação	Unidade de Medida
Implantar o Sistema Eletrônico de Informações - SEI em todos os processos de todas as áreas da Fundacentro	100%	Proporção das áreas/processos alcançados pela implantação
Elaborar o Planejamento Estratégico Institucional da Fundacentro	100%	Proporção de cumprimento das fases de elaboração

Art. 2º - Esta Portaria entra em vigor na data de sua publicação.

Ministério da Educação

GABINETE DO MINISTRO

PORTARIA Nº 884, DE 25 DE ABRIL DE 2019

Disciplina a tramitação de propostas de atos normativos e documentos sujeitos à apreciação do Ministro de Estado ou do Secretário Executivo, no âmbito do Ministério da Educação.

O MINISTRO DE ESTADO DA EDUCAÇÃO, no uso da atribuição que lhe confere o art. 87, parágrafo único, inciso I, da Constituição, bem como o disposto no Decreto nº 9.665, de 2 de janeiro de 2019, resolve:

Art. 1º Esta Portaria disciplina a tramitação de propostas de atos normativos e de expedientes sujeitos à apreciação do Ministro de Estado da Educação ou do Secretário Executivo, encaminhadas pelos órgãos e pelas entidades vinculadas ao Ministério da Educação.

§ 1º Para efeito desta Portaria, consideram-se propostas de atos normativos os projetos de:

- I - emenda constitucional;
- II - medida provisória;
- III - lei complementar;
- IV - lei ordinária;
- V - decreto;
- VI - portaria ministerial; e
- VII - portaria interministerial.

§ 2º Aplica-se, também, o disposto nesta Portaria às propostas de expedientes sujeitos à apreciação do Ministro de Estado da Educação, tais como:

- I - projetos de mensagem ao Congresso Nacional;
- II - minutas de despachos;
- III - minutas de ofícios;
- IV - minutas de relatórios;
- V - proposta de votos;
- VI - autorização para celebração de contratos administrativos ou prorrogação de contratos em vigor;
- VII - requerimento de informações da Câmara dos Deputados e do Senado Federal;

VIII - projetos de lei submetidos à sanção presidencial; e

IX - outros documentos sujeitos à manifestação de competência do Ministro ou do Secretário Executivo.

Art. 2º Os órgãos e as entidades observarão suas respectivas áreas de competência no envio de propostas à Secretaria-Executiva, as quais deverão ser instruídas por:

I - expediente subscrito pelo dirigente do órgão e da entidade, contendo resumo das justificativas para a apresentação da minuta do ato normativo ou documento;

II - nota técnica, acompanhada de cópias da legislação aplicável e normativos pertinentes, e demais anexos julgados necessários, contendo elementos que atendam, no que couber, ao disposto nos incisos I a VII do caput do art. 32 do Decreto nº 9.191, de 1º de novembro de 2017, quando se tratar de propostas de atos normativos;

III - parecer da procuradoria jurídica, no caso das entidades vinculadas; e

IV - minuta do ato normativo ou documento.

§ 1º Os processos e documentos deverão ser tramitados pelo Sistema Eletrônico de Informações - SEI, conforme disposto na Portaria nº 1.042, de 4 de novembro de 2015.

§ 2º Deverá ser observado, na elaboração das minutas de textos normativos, o disposto na Lei Complementar nº 95, de 26 de fevereiro de 1998, no Decreto nº 9.191, de 2017, e no Manual de Redação da Presidência da República.

§ 3º Os responsáveis pela elaboração dos documentos referidos nos §§ 1º e 2º do art. 1º desta Portaria deverão inserir no Sistema Eletrônico de Informações - SEI o arquivo editável das respectivas minutas.

Art. 3º A Secretaria Executiva coordenará a tramitação das propostas de atos normativos e expedientes no âmbito do Ministério da Educação.

§ 1º A Secretaria Executiva avaliará as propostas de atos normativos, bem como avaliação das manifestações das áreas consultadas, a partir da completa instrução do processo.

§ 2º As situações de urgência deverão ser justificadas pelo dirigente do órgão ou entidade interessada ou pelo Chefe da Assessoria Parlamentar.

§ 3º No caso dos expedientes elencados nos incisos VII e VIII do § 2º do art. 1º, a tramitação será coordenada pela Assessoria Parlamentar do Gabinete do Ministro, considerando os prazos para manifestação previstos na Constituição Federal.

Art. 4º A Secretaria-Executiva poderá consultar outras áreas competentes do Ministério para avaliação técnica dos atos e documentos, assim como da conveniência e oportunidade de sua assinatura.

Parágrafo único. Poderá ser estipulado prazo para manifestação das áreas consultadas.

Art. 5º A Secretaria Executiva poderá solicitar ao órgão ou à entidade proponente informações adicionais para instruir o exame dos atos normativos bem como articular com os órgãos interessados para os ajustes necessários nos projetos de atos normativos.

Art. 6º As propostas de atos normativos, bem como as manifestações das áreas consultadas, serão examinadas pela Secretaria Executiva e, caso não haja óbices e estejam compatíveis com as políticas e diretrizes estabelecidas pelo Ministro de Estado da Educação, serão encaminhadas ao Gabinete do Ministro.

§ 1º A Secretaria Executiva poderá promover correções de erros materiais ou formais, devidamente registradas em nota, nas propostas a serem submetidas ao Gabinete do Ministro, para despacho, dispensando-se nova manifestação das áreas técnicas ou jurídicas nestas hipóteses.

§ 2º Os atos referidos nos §§ 1º e 2º do art. 1º, que possuam prazo para sua conclusão, deverão ser encaminhados ao Gabinete do Ministro com antecedência mínima de três dias úteis.

§ 3º Os pedidos de afastamento do País deverão ser encaminhados para despacho com antecedência mínima de quinze dias da data prevista para o início da viagem.

§ 4º As situações de urgência previstas no § 2º do art. 3º, após avaliação da Secretaria Executiva, deverão ser objeto de despacho pelos dirigentes dos órgãos e das entidades interessadas com o Ministro de Estado da Educação.

Art. 7º Quando se tratar de requerimentos de informações do Poder Legislativo e projetos de lei submetidos à sanção presidencial, os dirigentes dos órgãos e das entidades interessadas deverão encaminhar os expedientes ao Chefe da Assessoria Parlamentar nos seguintes prazos, contados da data de recebimento:

I - no caso de requerimentos de informações, em até quinze dias corridos; ou

II - no caso de sanção, em até quatro dias úteis.

§ 1º Os expedientes encaminhados à Assessoria Parlamentar com prazo superior ao estipulado nos incisos I e II do caput deverão ser justificados expressamente pelo dirigentes do órgão e da entidade, quando do envio.

§ 2º Após o recebimento, a Assessoria Parlamentar encaminhará o requerimento de informações à Secretaria Executiva, que terá o prazo de até cinco dias para devolução da manifestação.

§ 3º Os expedientes encaminhados pela Assessoria Parlamentar à Secretaria Executiva com prazo superior ao estipulado no § 2º, nos casos em que os prazos definidos no caput tenham sido cumpridos pelos órgãos e pelas entidades, deverão ser justificados expressamente pelo Chefe da Assessoria Parlamentar, quando do envio do expediente.

Art. 8º O envio, pela Secretaria Executiva, dos processos e documentos objeto desta Portaria à análise pela Consultoria Jurídica junto ao Ministério da Educação ocorrerá, preferencialmente, após a avaliação técnica de todos os órgãos e todas as entidades envolvidos.

Art. 9º A tramitação de propostas de atos normativos no Serviço Eletrônico de Informações - SEI observará a classificação disposta na legislação pertinente, em especial na Lei nº 12.527, de 18 de novembro de 2011, do Decreto nº 7.724, de 16 de maio de 2012, e do Decreto nº 7.845, de 14 de novembro de 2012.

Art. 10. As solicitações em desacordo com o disposto nesta Portaria não serão apreciadas pelo Ministro de Estado da Educação ou pelo Secretário Executivo, devendo ser restituídas às unidades de origem, para ajustes ou arquivamento.

Art. 11. É estabelecido o prazo de dez dias úteis para que a Secretaria Executiva, a Assessoria Parlamentar, e os órgãos e as entidades proponentes adaptem seus procedimentos ao disposto nesta Portaria.

Art. 12. Esta Portaria entra em vigor na data de sua publicação.

ABRAHAM WEINTRAUB

CONSELHO NACIONAL DE EDUCAÇÃO

CÂMARA DE EDUCAÇÃO SUPERIOR

RESOLUÇÃO Nº 2, DE 24 DE ABRIL DE 2019

Institui as Diretrizes Curriculares Nacionais do Curso de Graduação em Engenharia.

O Presidente da Câmara de Educação Superior do Conselho Nacional de Educação, no uso de suas atribuições legais, com fundamento no art. 9º, § 2º, alínea "e", da Lei nº 4.024, de 20 de dezembro de 1961, com a redação dada pela Lei nº 9.131, de 25 de novembro de 1995, e nas Diretrizes Curriculares Nacionais (DCNs), elaboradas pela Comissão das Diretrizes Curriculares Nacionais do Curso de Graduação em Engenharia (DCNs de Engenharia), propostas ao CNE/CES pela Secretaria de Regulação e Supervisão da Educação Superior do Ministério da Educação (SERES/MEC), e com fundamento no Parecer CNE/CES nº 1/2019, homologado por Despacho do Senhor Ministro de Estado da Educação, publicado no DOU de 23 de abril de 2019, resolve:

CAPÍTULO I

DAS DISPOSIÇÕES PRELIMINARES

Art. 1º A presente Resolução institui as Diretrizes Curriculares Nacionais do Curso de Graduação em Engenharia (DCNs de Engenharia), que devem ser observadas pelas Instituições de Educação Superior (IES) na organização, no desenvolvimento e na avaliação do curso de Engenharia no âmbito dos Sistemas de Educação Superior do país.

Art. 2º As DCNs de Engenharia definem os princípios, os fundamentos, as condições e as finalidades, estabelecidas pela Câmara de Educação Superior do Conselho Nacional de Educação (CES/CNE), para aplicação, em âmbito nacional, na organização, no desenvolvimento e na avaliação do curso de graduação em Engenharia das Instituições de Educação Superior (IES).

CAPÍTULO II

DO PERFIL E COMPETÊNCIAS ESPERADAS DO EGRESSO

Art. 3º O perfil do egresso do curso de graduação em Engenharia deve compreender, entre outras, as seguintes características:

I - ter visão holística e humanista, ser crítico, reflexivo, criativo, cooperativo e ético e com forte formação técnica;

II - estar apto a pesquisar, desenvolver, adaptar e utilizar novas tecnologias, com atuação inovadora e empreendedora;

III - ser capaz de reconhecer as necessidades dos usuários, formular, analisar e resolver, de forma criativa, os problemas de Engenharia;

IV - adotar perspectivas multidisciplinares e transdisciplinares em sua prática;

V - considerar os aspectos globais, políticos, econômicos, sociais, ambientais, culturais e de segurança e saúde no trabalho;

VI - atuar com isenção e comprometimento com a responsabilidade social e com o desenvolvimento sustentável.

Art. 4º O curso de graduação em Engenharia deve proporcionar aos seus egressos, ao longo da formação, as seguintes competências gerais:

I - formular e conceber soluções desejáveis de engenharia, analisando e compreendendo os usuários dessas soluções e seu contexto;

