

UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL

Faculdade de Farmácia

Atividade de Ensino: Trabalho de Conclusão de Curso

**Avaliação de Rankings Internacionais de Qualidade entre Universidades e Faculdade de Farmácia da
Universidade Federal do Rio Grande do Sul**

Rebecca Joy Armstrong

Porto Alegre, novembro de 2019.

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Orientador

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“A melhor maneira de prever seu futuro é cria-lo”

Abraham Lincoln

Este artigo foi elaborado seguindo as normas de publicação *American Journal of Pharmaceutical Education*, apresentadas em anexo (ANEXO A).

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À minha família pelo seu apoio durante toda minha graduação.

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Ao meu professor orientador pela sua ajuda na elaboração deste TCC.

E a todos que me auxiliaram durante essa graduação.

ABREVIACOES

UFRGS – Federal University of the Rio Grande do Sul

PP – Pedagogical Project

RUF – Ranking *Universitrio Folha*

RWWU – Ranking Web of World Universities – Top 12000 Webometrics

ARWU – Academic Ranking of World Universities – Shanghai

RWWP – Ranking Web of World Repositories – Webometrics

QSWUR – QS (Quacquarelli Symonds) World University Ranking

THE – Times Higher Education

4ICU – 4 International Colleges & Universities

SIR – SCImago Institutions Rankings

URAP – University Ranking By Academic Performance

CWTS LR – Centre for Science and Technology Studies (Dutch: *Centrum voor Wetenschap en Technologische Studies*) Leiden Ranking

CWUR – Center for World University Rankings

USNR – United States News Ranking

WPUR – Worldwide Professional University Rankings – RankPro

NTUR – National Taiwan University Ranking

IDP – Institutional Development Plan

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1 **RESEARCH ARTICLE**

2 **Assessing International Rankings for Quality Between Universities and The Faculty of Pharmacy,**
3 **Federal University of the Rio Grande do Sul**

4 Rebecca J. Armstrong, BPharm^a, Diogo Pilger, PhD^a

5 ^a Federal University of Rio Grande do Sul, Faculty of Pharmacy, Porto Alegre, Brazil

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7 **FINANCIAL DISCLOSURES AND CONFLICTS**

8 There are no financial disclosures to be made, nor any conflicts to be mentioned.

9

10 **ABSTRACT**

11 **Objective:** To evaluate the position of the Federal University of the Rio Grande do Sul (UFRGS), a
12 public university, in world rankings with special attention to the Pharmacy course. To compare the
13 indicators and ranking methods with the curricular guidelines, the UFRGS Pharmacy curriculum and
14 the Pharmacy course Pedagogical Project (PP).

15 **Methods.** Initially, a theoretical evaluation of the global university ranking systems was made, with
16 special attention being given to analyzing the 13 rankings indicated on the UFRGS website alongside
17 the Ranking *Universitário Folha* (RUF), a national ranking system that compares the courses in all
18 the Brazilian universities. The various indicators were compared and the position of the University
19 and the Faculty of Pharmacy verified. Finally, the information obtained was compared with the
20 curricular guidelines, the UFRGS Pharmacy curriculum and the PP of the Pharmacy Course and
21 conclusions drawn.

22 **Results.** Consideration of the 13 ranking systems and their indicators provided an ample overview of
23 what is considered important in educational quality analysis. Only 4 of these 13 rankings had the
24

25 **Corresponding Author:** Rebecca Joy Armstrong, Faculty of Pharmacy, Av. Ipiranga, 2752 - Azenha, Porto
26 Alegre, Rio Grande do Sul, Brazil. Tel: +55 (51) 3308-5437. E-mail: rebecca.armstrong.br@gmail.com

27 specific Faculty of Pharmacy's position, which was considered important for this study, therefore,
28 these were chosen and the RUF added for comparison. A categorization was proposed after the
29 analyses of the 13 ranking's indicators, producing 3 groups which were then used to organize the RUF
30 indicators. After comparing national guidelines with the Pharmacy Course PP and the present UFRGS
31 Pharmacy course, it became clear that the curriculum and the PP are perfectly in line with these
32 guidelines, indicating that the international position does not necessarily correspond with the function
33 expected by the country in which the university is located.

34 **Conclusion.** This ranking, Brazilian national guidelines, Pharmacy PP and UFRGS Pharmacy
35 curriculum analysis allows for a more extensive comprehension relative to the value of the world-
36 wide ranking systems, and the position of the UFRGS and Faculty of pharmacy, the 'founders' of
37 higher education in the South of Brazil. Also bringing a greater awareness that what is most important
38 in a university setting, is the fulfilment of the student's expectations as well as the national function
39 of the course in question.

40 **Keywords.** Ranking, pharmacy, university, world, indicators.

41

1 **INTRODUCTION**

2 On an international scale, it is becoming increasingly important for each country to exceed the other in
3 several respects, including in the field of education. Many governments across the world have created a
4 complex in the battle to obtain a “world-class” university, having put the development of competitive higher
5 education and research systems at the very heart of their national economic strategies¹. Yet no one knows how
6 exactly to define a world-class university nor how to be one². Paralleled with this, the importance of university
7 rankings has also grown. Using quantitative methodologies and reputation, the rankings present structured
8 parameters based on a globalized vision of quality, parameters which do not always reflect the value of the work
9 developed nor the relevance of the university, to either local or regional development³.

10 World-wide ranking systems may be considered as valuable tools in the assessment of transparency
11 and accountability of individual institutions. They also attempt to provide a reliable source as to the quality of
12 education for various stakeholders in an institution: for students, they indicate the potential monetary and private
13 benefits that university attainment may provide; for employers, they indicate what can be expected from
14 graduate students; and for government and policymakers, they suggest quality levels and international standards,
15 as well as how they impact on national economic capacity and capability⁴.

16 Each world-wide university ranking system evaluates/measures the quality of a particular university
17 based on different indicators, with each system having its own emphasis and aiming at creating a more
18 trustworthy position for each university under assessment. In certain rankings, the activity and visibility of the
19 university world-wide is considered indispensable, as in the Ranking Web of World Universities (RWWU). For
20 others such as the QS (Quacquarelli Symonds) World University Ranking (QSWUR), employer reputation is
21 rated as one of the more important indicators. The aim of this study is to evaluate the position of the UFRGS in
22 various university world ranking systems, with special attention to the Pharmacy course, as these (UFRGS and
23 pharmacy course) were the ‘founders’ of higher education in the South of Brazil. It also seeks to compare the
24 indicators and ranking methods with the curricular guidelines, UFRGS Pharmacy curriculum and the PP of the
25 Pharmacy Course and conclude accordingly.

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METHODOLOGY

A theoretical evaluation of the global university rankings was carried out, analyzing the 13 rankings indicated on the UFRGS website along with the RUF. At this point, it is important to explain briefly the importance of the UFRGS and the Pharmacy course for the higher education in the South of Brazil. The UFRGS is a public university and its history began with the founding of the School of Pharmacy and Chemistry in 1895, thus beginning also, the higher education in Rio Grande do Sul. For this reason, not only for what the University is at present, but also for what it was, it has been used as the basis for this research and study analysis.

The various indicators, from the 13 rankings on the UFRGS site, were compared and the position of the University and the Faculty of Pharmacy verified. Finally, a comparison was made between the information obtained and the curricular guidelines of the Pharmacy course, the UFRGS curriculum and the PP of the Pharmacy Course at the UFRGS.

Initially, the main site of the UFRGS was accessed⁵. On this site, a search was made for the term “rankings”, and the first article that appeared, entitled “UFRGS position in International Assessment Rankings”, was selected. In this article, 13 different world-wide ranking systems were analyzed, and the position of the UFRGS compared.

These 13 different rankings were chosen, because they present the ranking for the public university (UFRGS) that has been considered important for this study, and their different indicators were studied. Also, the position of the UFRGS was compared in each, along with the specific position of the Faculty of Pharmacy. On closer examination it was verified that only 4 out of these 13 rankings provided the specific position of the Pharmacy course. Since the specific ranking of the Pharmacy course is considered important for this study, the 4 rankings with the Pharmacy position were selected and added to them was the RUF, a well-known national ranking system that analyses only the individual courses of each university, as a means for comparison.

The indicators and methods of evaluation for these 5 rankings (4 rankings with the Pharmacy position and RUF) were studied in detail, in order to come to a better understanding as to how they determined a trustworthy position for each university.

1 Using all the indicators from the 13 ranking systems mentioned at the beginning of this section, a
2 proposal of categorization of these indicators was created. Three groups were defined that include and divide
3 all the indicators from the 13 rankings. These created a pattern that then was used to organize the RUF indicators.
4 Also, these three groups of indicators were used to compare the international ranking systems with the Brazilian
5 National Curricular Guidelines, the UFRGS Pharmacy curriculum and also the PP of the pharmacy course,
6 leading to the conclusion whether the UFRGS and Brazilian education as a whole is in keeping with was the
7 world-wide ranking systems analyze.

8 Finally, the last 5 years' rankings of the University and Pharmacy course, nationally and internationally
9 were also compared and analyzed as to the reason for the change in placing. All the data was collected up to the
10 month of July 2019 and updates subsequent to this date were not considered.

14 **RESULTS**

15 The 13 rankings indicated on the UFRGS website were: 1) Ranking Web of World Universities – Top
16 12000 Webometrics (RWWU); 2) Academic Ranking of World Universities (ARWU) – Shanghai; 3) Ranking
17 Web of World Repositories – Webometrics (RWWR); 4) QS World University Ranking (QSWUR); 5) Times
18 Higher Education (THE); 6) 4 International Colleges & Universities (4 ICU); 7) SCImago Institutions Rankings
19 (SIR); 8) University Ranking By Academic Performance (URAP); 9) CWTS (Centre for Science and
20 Technology Studies) Leiden Ranking (CWTS LR); 10) Center for World University Rankings (CWUR); 11)
21 United States News Ranking (USNR); 12) Worldwide Professional University Rankings – RankPro (WPUR);
22 13) National Taiwan University Ranking (NTUR). See Table I for comparison UFRGS classification in the 13
23 rankings.

24 All the rankings have been revised and confirmed so that only ARWU, QSWUR, URAP and NTUR
25 were found to have specific ranking for the pharmacy course. For this reason, for the rest of this research, only
26 these four were analyzed, because of the importance the UFRGS Pharmacy course had in the higher education
27 in the South of Brazil it has been considered essential that its specific ranking be analyzed. Also, the RUF (from

1 the *Folha de São Paulo*) was added to these four, as it is a well-recognized course ranking system in Brazil, and
2 will be used as a national comparison. See Table II for comparison of UFRGS/Pharmacy course in the 5
3 remaining rankings chosen.

4 Below are detailed the principle findings from the 5 chosen ranking systems:

5 1. ARWU:

6 Universities are ranked according to academic or research performance, including alumni and staff winning
7 Nobel Prizes and Field Medals, highly cited researchers, papers published in *Nature and Science*, papers
8 indexed in major citation indices, and the per capita academic performance of the institution⁶. The criteria for
9 assessing university performance, as cited by the ranking, is as follows: quality of education (10%), quality of
10 faculty (40%), research output (40%), and per capita performance (10%).

11 2. QSWUR:

12 Universities are ranked by six simple metrics, believed to be effective in determining university
13 performance: academic reputation (40%), employer reputation (10%), faculty/student ratio (20%), citations per
14 faculty (20%), international faculty ratio (5%), and international student ratio (5%)⁷.

15 3. URAP:

16 Since URAP is an academic performance-based ranking, publications constitute the basis of its ranking
17 methodology. Both quality and quantity of publications and international research collaboration performance
18 are used as indicators⁸, namely: number of articles (21%), citation (21%), number of documents (10%), total
19 article impact (18%), total citation impact (15%), and international collaboration (15%).

20 4. NTU:

21 Performance measures are composed of eight indicators, which together represent three different criteria of
22 scientific paper performance: research productivity (25%), research impact (35%), and research excellence
23 (40%)⁹.

24 5. RUF:

25 This ranking classifies the 196 Brazilian institutions using 5 different criteria: Research (42%), Education
26 (32%), Market (18%), Internationalization (4%) and Innovation (4%)¹⁰.

1 Having studied and read in detail the indicators used by the 13 ranking systems taken from the UFRGS
2 site, to classify the universities, a proposal of categorization was come to. Three groups were created to
3 categorize the indicators from the 13 ranking systems (Table III), thus facilitating further analyses. These were
4 defined as: Quality of Education (students); Standard of Professorship; and Output and International
5 Performance. Using these, a pattern was created to organize the RUF indicators into three groups: Marketing
6 (saleability after graduation) in the Quality of Education (students) group; Teaching in the Standard of
7 Professorship; and Research, Internationalization and Innovation in Output and International Performance. This
8 method of grouping shows that the indicators used in the national ranking system correlate perfectly with the
9 international criteria.

10 Figure I represents the positioning for the last 5 years of the UFRGS and, in particular, the Pharmacy
11 Course, as detailed in the 5 selected rankings, highlighting the fact that the position has, remained either stable
12 or in a couple of cases, deteriorated.

13 The three groups of indicators created were then compared with the national guidelines, the UFRGS
14 pharmacy curriculum and the PP, that is currently based on the 2002 national guidelines. Given this, and the
15 fact that we recorded the University's ranking before 2017, we thought it relevant to mention briefly what the
16 main changes are between the 2002 national guidelines¹¹ and the 2017 version¹², which is now in force.

17 From the analysis of the curricular guidelines of 2002 and 2017, it was observed that the 2017 version
18 emphasizes the importance of practice and practical experience during the course, whereas this point is not
19 mentioned much in the 2002 version. Also, major advancement was noted in the increased level of competency
20 linked to clinical practice, including structuring of training in care sectors and changes in the course workload
21 – giving a more clinical view of the pharmacy course. These curricular changes can have a positive impact on
22 various of the indicators used in the ranking systems, such as: quality of education, alumni employment,
23 academic possibilities and even research related performance indicators; resulting in a possible augmentation
24 of the University's/Faculty's position in the various rankings.

25 Findings from the three indicator groupings: Quality of Education (students), Standard of Professorship
26 and Output and International Performance, relative to the 2017 national guidelines, were highlighted as
27 following:

1 Article 3 defines the Pharmacy course as producing graduate pharmacists who are recognized as health
2 professionals, with training in drugs, medicines and pharmaceutical assistance, integrated with training in
3 clinical and toxicological analyses, in cosmetics and food and geared towards the extended health care of the
4 individual, the family and the community¹². Article 7 also highlights that the bachelor's degree should be
5 structured in three sections throughout the degree, including theoretical and practical activities, internships and
6 various complementary activities to form as complete a professional as possible¹².

7 Qualifications needed for teaching are also highlighted. Article 15 states that teachers must have
8 academic qualifications and professional experience in their specific areas of expertise. This is defined as the
9 minimum requirement in order to teach what is within their responsibility¹².

10 Article 18 deals with International output in the category of research, stating that it must include
11 effective economic, social, cultural, political and environmental demands, as well as guarantee the development
12 of institutional teaching, extension and scientific initiation/research policies as contained in the Institutional
13 Development Plan (IDP)¹².

14 Consideration of the UFRGS pharmacy curriculum¹³, highlighted a large number of diverse modules
15 that should give the graduate Pharmacist a multi-faceted qualification. In order to qualify as a teacher in the
16 UFRGS, applicants must present with a doctorate in the relevant field and experience in the area of interest¹⁴.
17 Finally, relative to International output and research in the pharmacy degree, it is very much encouraged
18 throughout the entire course and students must fulfil a certain number of hours of complementary activities, one
19 of which may be research through scientific initiation¹³. Also, since the UFRGS Faculty of Pharmacy has a
20 very good post-graduate program, there is a great emphasis put on research both with graduate students, and
21 masters and doctorate students, leading to more publication and International output.

22 The final step in this study analyzed the PP of the UFRGS Pharmacy Course¹⁵. As a brief explanation,
23 the PP is a document that brings together the results of collective discussions, reorientations and evaluations of
24 university courses. Considering in more detail its name: it is a project because it gathers the proposals of actions
25 to be performed within stipulated time; and it is pedagogical because it defines and organizes the educational
26 activities and projects necessary for the teaching and learning process¹⁶.

1 Of primary importance, PP of the UFRGS Pharmacy Course states that the curriculum follows closely
2 the National curricular guidelines. The objective of the Pharmacy degree is seen as preparing: ‘professionals
3 with generalist, humanist, critical and reflective training, to work in all levels of health care, based on scientific
4 and intellectual rigor’¹⁵. Also, ‘the qualified egress professional must act with ethics and commitment to society,
5 seeking solutions to the needs of the country and the market’¹⁵.

6 Considering the pedagogical concepts presented in the Project, it is evident that the quality of education
7 provided for the students is of major importance. Students receive a large theoretical knowledge of subjects of
8 import for pharmacy, along with practical experience in laboratories, and through work experience in non-
9 obligatory and obligatory activities during the course. In all of this, the professors play an important role in the
10 teaching of the students, involving them in many activities and working towards producing the best qualified
11 pharmacists possible. For this, of course, the professors themselves also have to be well qualified.

12 Finally, the students are involved in complementary activities which aim to encourage the pursuit of
13 other learning experiences. These may include such areas as scientific research, mentoring and/or cultural skills,
14 leading, many times, to the production of articles and other scientific information. Finally, the course
15 dissertation provides the student with the skills for developing a scientific methodology, with written and oral
16 communication skills and an in-depth expertise in a relevant area.

17 18 19 **DISCUSSION**

20 During this study, a large volume of literature with ‘University World Rankings’ as its subject matter
21 was accessed, read and analyzed. A large variation in opinions respecting the ranking systems was noted. Given
22 the battle for excellence that exists between countries respecting their educational quality, rankings are seen to
23 be a very effective way of making a world-wide comparison. Simon Marginson, author of ‘Global University
24 Rankings: Implications in general and for Australia’ is quoted as saying: “global university rankings are a potent
25 device for framing higher education on a global scale¹⁷”.

26 Santos SM¹⁸, in his PhD thesis suggests that, rankings, either within or between countries, are helping
27 to transform educational institutions into strategic corporations competing for positions, incentivizing therefore,

1 the betterment of the institutions. He also states that, despite criticism of the methodological validity of various
2 indicators or the weights assigned to them, rankings have become a convenient policy instrument and
3 management tool.

4 However, the general opinion is that ranking systems do not produce a fair comparison of universities.
5 In his article entitled ‘The THES University Rankings: Are They Really World Class?’, Richard Holmes
6 suggests that: “rankings should be approached with caution” since they are biased against certain universities,
7 for example, ones placed in “minor” economic countries¹⁹. Ellen Hazelkorn comments: “Rankings are only
8 one form of comparison; they are popular today because of their simplicity. However, their indicators of success
9 are misleading²⁰”.

10 Much of the literature reviewed for this study, emphasized the importance of each university to “fulfil
11 the purpose and functions which governments and society want them to fulfil²⁰”. This detail is not considered
12 by world ranking systems, since they are viewed from a world-wide aspect. In his article entitled ‘World Class
13 Universities and the Consensus for Excellence: Global and Local Trends’, Thiengo LC³ comments that
14 International Rankings compare educational institutions from different countries, each of which are immersed
15 in different social and historical contexts and exercise different functionalities in differentiated educational
16 systems and yet this is not taken into account in the quantitative data analyzed by these systems.

17 From a more general point of view, however, world ranking systems are important for world-wide
18 comparison. Frequently, higher authorities want to know how the quality of their education compares with that
19 of other countries. It is also important for students travelling to study in other countries, to know both the quality
20 of university they are leaving and the quality of the one they are going to⁴. “Rankings are creating a sense of
21 urgency, accelerating the pace of reform and influencing institutional support²⁰”.

22 Given the vast amount of literature reviewed in this study, it became obvious that the general opinion
23 respecting ranking systems varies greatly amongst authors, but in general, it is seen as a form of world-wide
24 comparison, albeit, at times, of doubtful reliability.

25 Considering more specifically the faculty of pharmacy, ranking systems are seen as a novel approach
26 in the measure of excellence. There have been several studies about the importance of practical activities in the
27 pharmacy degree, an example of which would be the article by Cherie Tsingos & Co. entitled ‘Reflective

1 Practice and Its Implications for Pharmacy Education²¹. However, no studies showed the influence of world-
2 wide rankings on the pharmacy course.

3 In this present study, ranking systems have been considered important for the UFRGS Faculty of
4 Pharmacy. They are of specific interest in this particular graduate course because of its high rating, not just
5 inside the country, but also world-wide. In 2015, the BPharm UFRGS appeared between 101st and 150th position
6 in the QSTUR²².

7 However, as is seen in Figure I, the pharmacy ranking has remained stable or in a couple of rankings,
8 as in the QSTUR, dropped, over the past few years, raising the question: What could have caused the drop? and
9 in the case of a stable position, is that negative for the University/Faculty? Comparing the indicators with the
10 national guidelines, the PP of the Pharmacy Course and the UFRGS pharmacy curriculum, we concluded that
11 the pharmacy course is still in accordance with the Brazilian national guidelines.

12 Also, we concluded that, although variation between the international ranking systems remains
13 significant, all the indicators can be fitted into three broad groups: Quality of Education (students); Standard
14 of Professorship; and Output and International Performance. This suggests that, although some Rankings give
15 a greater emphasis to certain points, they all aim ultimately at creating a more trustworthy position for each
16 university.

17 Considering these three groups, it is noteworthy that the UFRGS pharmacy curriculum and the PP of
18 the Pharmacy Course correlates perfectly with the three groups of indicators created from the 13 ranking
19 systems.

20 Taking this all into account, it is evident that any drop in the University/Faculty's position is not linked
21 to non-conformation with national standards, for they have been perfectly met by the University. It is also
22 interesting to mention, that the stability in the positioning of the University/Faculty in various of the rankings
23 can be considered a positive factor, because over the past years the ranking systems have got stricter, therefore
24 to maintain a position means a betterment in the quality of the education.

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1 **CONCLUSION**

2 This ranking, Brazilian National guidelines, Pharmacy PP and curriculum analysis, brought to light the
3 fact that the UFRGS and Faculty of pharmacy, the ‘founders’ of higher education in the South of Brazil, are
4 perfectly in keeping with the national expectations and also, in a general overview, are stable in world-wide
5 ranking systems, even though the ranking systems have got stricter over the years, proving that the quality of
6 education is improving in the University. However, this type of study, linking world-wide rankings systems and
7 quality of education, never really ends, because we are always trying to better understand the qualitative
8 indicators used by the ranking systems and working towards improving the quality of education in the
9 university, thereby bringing a more complete and comprehensive knowledge to the alumni.

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12 **ACKNOWLEDGMENTS**

13 Nothing to declare.

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1 **TABLES**

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3 Table I. Comparison UFRGS classification in the 13 Rankings with ranking's country of origin.

4

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RANKING	World Wide Classification UFRGS	National Classification UFRGS	Country Of Origin
RWWU January 2019	3	1	Spain
4ICU 2019	345	3	Australia
WPUR 2018-2019	407	3	International Council of Scientists ICS - professors from more than 40 countries
CWTS LR 2019	192	4	The Netherlands
RWWU 2019	368	5	Spain
THE 2019	601-800	5	United Kingdom
CWUR 2018-2019	398	5	United Arab Emirates
SIR 2019	411	5	China
URAP 2018-2019	336	5	Turkey
NTUR 2019	407	5	Taiwan
ARWU 2018	401-500	5-6	China
USNR 2019	465	6	United States of America
QSWUR 2019	601-650	9	United Kingdom

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1 Table II. Comparison UFRGS/Pharmacy Course in the 5 Remaining Rankings Chosen.

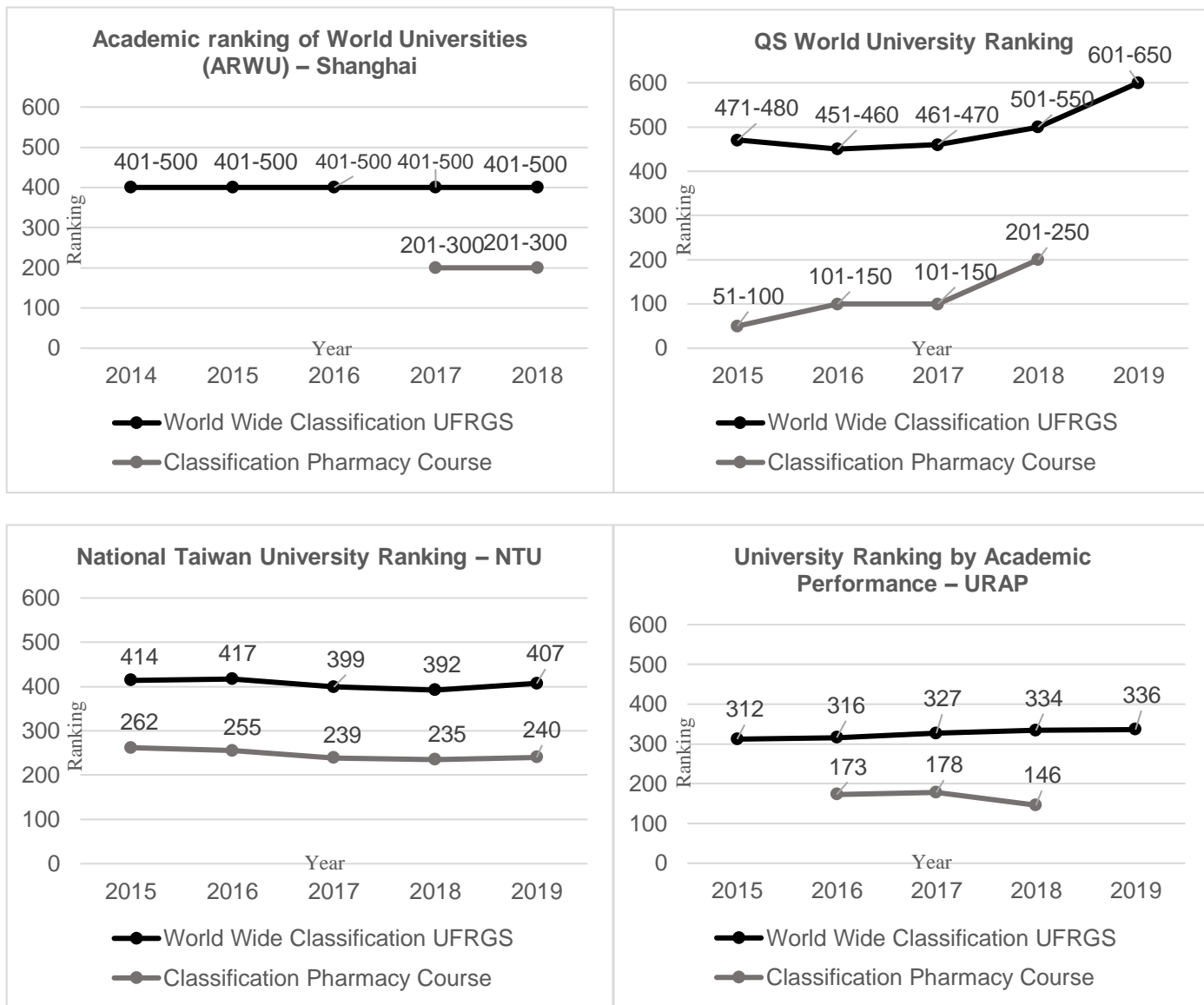
RANKING	World Wide Classification UFRGS	National Classification UFRGS	Classification Pharmacy Course
RUF 2018	--	5	5
URAP 2018-2019	336	5	146
QSWUR 2019	601-650	9	201-250
ARWU 2018	401-500	5-6	201-300
NTUR 2019	407	5	240

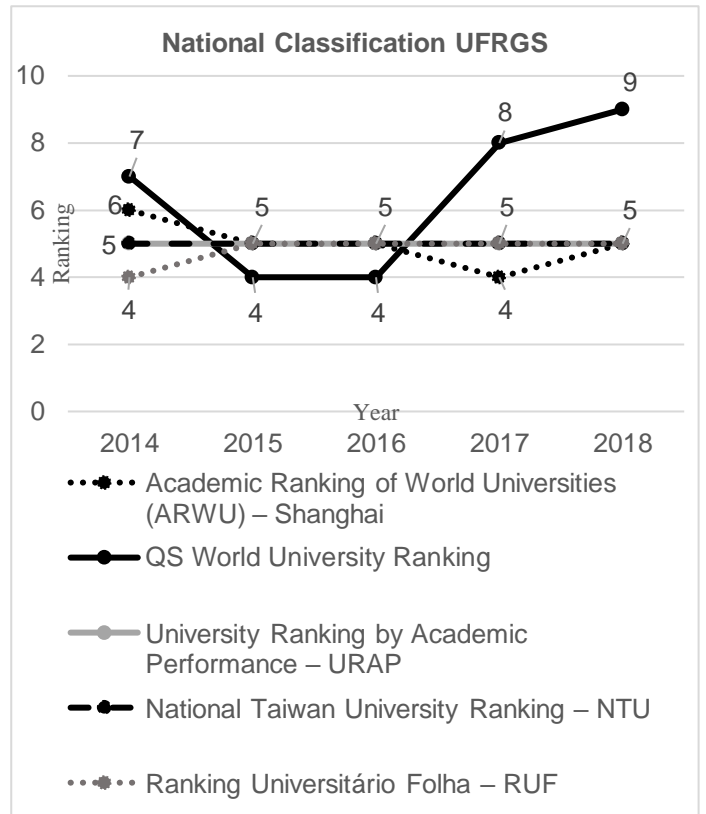
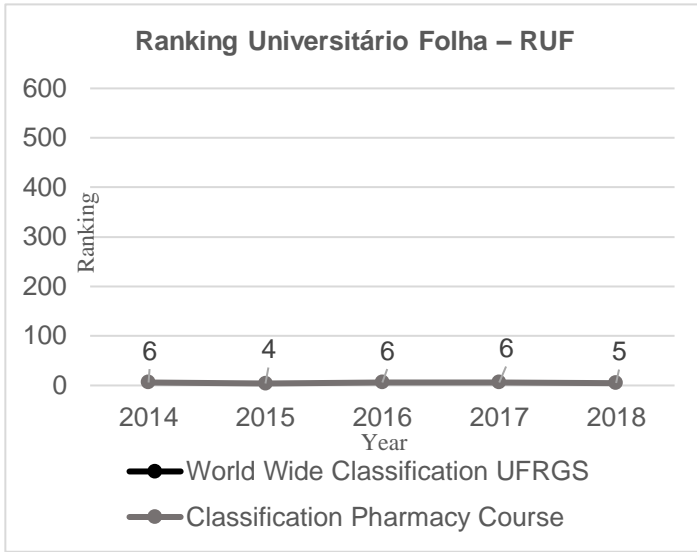
12 Table III. Three groups that were created to include and divide all the indicators of the 13 rankings.

	Quality of Education (Students)	Standard of Professorship	Output and International Performance	
Indicators	Activity; Quality of Education; Number of Students; Employer Reputation; Faculty/Student Ratio; Industry Income; Innovation; Alumni Employment; Books; Conferences; Academic Possibilities.	Quality of Faculty; Citations per Faculty; Teaching.	Visibility; Research Output; Per Capita Performance; Size; Number of Documents/Articles; Academic Reputation; International Faculty Ratio; International Student Ratio; Citations Indices; International Outlook; Research; Societal; Total Article Impact; Total Citation Impact; Publications with International Collaboration; Collaborative Publications; Quality Publications; Influence; Global Research Reputation; Regional Research Reputation; Normalized Citations Impact;	Total Citations; Number of Publications that are Among the 10 percent most Cited; Percentage of Total Publications that are Among the 10 percent most Cited; Number of Highly Cited Papers that are Among the Top 1 percent; Most Cited in their Respective Field; Percentage of total Publications that are Among the top 1 percent most Highly Cited Papers; Communicability and Information Availability on University Homepage; National and International Reputation; Research Productivity; Research Impact; Research Excellence.

FIGURES

Figure I. Historical worldwide position of the Federal University of the Rio Grande do Sul and Pharmacy Course in the last 5 years in the 5 selected rankings (continues following page).





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1 ANEXO A – NORMAS PARA SUBMISSÃO DE ARTIGOS CIENTÍFICOS DA REVISTA *AMERICAN*
2 *JOURNAL OF PHARMACEUTICAL EDUCATION*

3

4 INSTRUCTIONS FOR AUTHORS

5

6 ABOUT

7 The American Journal of Pharmaceutical Education (the Journal) is devoted to providing a forum for
8 communication of relevant information for pharmacy and interprofessional educators and all others interested
9 in the advancement of pharmacy education.

10

11 WHAT WE PUBLISH

12 To be considered for publication, manuscripts must relate to pharmacy education and provide useful information
13 for the national or international audience of the Journal. If a submission has only local or regional relevance, its
14 usefulness to most readers is limited and, thus, will not be accepted.

15

16 MANUSCRIPT REQUIREMENTS

17 All manuscripts must be typed in Times New Roman in size 11 font in English and double-spaced with page
18 numbers and non-continuous line numbering (do not use page breaks to reset the line numbering). Manuscripts
19 submitted to the Journal should be unpublished and not under consideration elsewhere. The content should be
20 scholarly, readable, clear, and concise. Standard nomenclature should be used. Manuscripts that were prepared
21 for oral presentation must be rewritten for print. Excessively long introduction or discussion sections in research
22 papers are discouraged.

23

24 TYPES OF ARTICLES

25 **Research Articles.** Research articles describe experimental or observational investigations that use formal
26 methods for data collection and reporting of results of studies directly related to pharmacy education. This
27 category also includes novel methods for professional and graduate student instruction (lectures, laboratories,
28 practice experiences, or courses) or manuscripts on programmatic and curriculum development.

29 ■ Abstracts should include a brief statement (1-3 sentences) for each of the following sections:

30

• Objective

31

• Methods

32

• Results

33

• Conclusion

34

■ Word Count: maximum of 3,000

35

■ Tables and/figures: maximum of 5

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■ References: maximum of 50

1 **Reviews.** Reviews are comprehensive, well-referenced, descriptive papers on teaching or research topics
2 directly related to entry-level and graduate or postgraduate education and training or skill development. Reviews
3 may be papers on the history of pharmacy education. Reviews should be systematic, include all relevant data,
4 and should not be overly influenced by the opinions and biases of the authors.

5 ▪ Abstracts should include a brief statement (1-3 sentences) for each of the following sections:

- 6 • Objectives
- 7 • Findings
- 8 • Summary

9 ▪ Word Count: maximum of 4,000

10 ▪ Tables and/figures: maximum of 5

11 ▪ References: maximum of 50

12 **Briefs.** Briefs are either small scale studies or pilot works of interest to others with limited assessment measures
13 or outcome data, or they may describe new and creative approaches to teaching and learning, curriculum, or
14 evaluation that are of interest to others in the field. Briefs should be timely and significant.

15 ▪ Abstracts should include a brief statement (1-3 sentences) for each of the following sections:

- 16 • Objective
- 17 • Methods
- 18 • Results
- 19 • Conclusion

20 ▪ Word Count: maximum of 2,000

21 ▪ Tables and/figures: maximum of 3

22 ▪ References: maximum of 50

23 **Commentaries.** These manuscripts are descriptive and intended to stimulate reflection and dialogue about
24 issues in pharmacy education (includes previous categories of statements, special articles, and viewpoints).
25 Commentaries are subject to peer-and/or editorial review. Authors may request editorial consideration of a
26 proposed commentary by submitting to the *Journal* editor (ajpe@ajpe.org) a one-paragraph brief describing the
27 proposed commentary for approval.

28 ▪ Abstract: maximum of 150 words, do not use subheadings

29 ▪ Word Count: maximum of 2,000

30 ▪ Tables and/figures: maximum of 2

31 ▪ References: maximum of 20

32 **Letters to the Editor.** Letters to the Editor serve as a forum for the expression of ideas that critique or expand
33 on the information presented in (a) previously published article(s) in the *Journal*. Authors are required to
34 identify themselves. The editor reserves the right to reject, shorten, excerpt, or edit letters for publication.

35 ▪ Abstract: none

36 ▪ Word Count: maximum of 2,000

1 ▪ Tables and/or Figures: none

2 ▪ References: maximum of 5

3

4 RESEARCH STANDARDS

5 All survey research must meet criteria established by the Journal's Editorial Board. Refer to the following
6 articles for guidelines:

7 1. Persky AM, Romanelli F. Insights, pearls, and guidance on successfully producing and publishing
8 educational research. *Am J Pharm Educ.* 2016;80(5): Article 75.
9 <http://www.ajpe.org/doi/full/10.5688/ajpe80575>

10 2. Anderson C. Presenting and evaluating qualitative research. *Am J Pharm Educ.* 2010;74(8): Article
11 141. <http://www.ajpe.org/doi/full/10.5688/aj7408141>

12 3. Draugalis JR, Plaza CM. Best practices for survey research reports revisited: implications of target
13 population, probability sampling, and response rate. *Am J Pharm Educ.* 2009;73(8): Article 142.
14 <http://www.ajpe.org/doi/full/10.5688/aj7308142>

15 4. Draugalis JR, Coons SJ, Plaza CM. Best practices for survey research reports: a synopsis for authors
16 and reviewers. *Am J Pharm Educ.* 2008;72(1): Article 11. <http://www.ajpe.org/doi/full/10.5688/aj720111>

17 5. Fincham JE. Response rates and responsiveness for surveys, standards, and the Journal. *Am J Pharm*
18 *Educ.* 2008;72(3): Article 43. <http://www.ajpe.org/doi/full/10.5688/aj720243>

19

20 MANUSCRIPT ORGANIZATION

21 All documents should be arranged in the following order, starting with a new page for each section:

22 1. Cover Letter

23 2. Institutional Review Board (IRB)

24 3. Title page

25 4. Abstract

26 5. Manuscript

27 6. References

28 7. Tables, Figures (upload .tiff files separately), and Appendices

29

30 MANUSCRIPT SECTIONS

31 **Cover Letter.** A cover letter may be used to address the editor and provide any relevant context. You may also
32 use it to explain unusual circumstances of a submission, such as similarity to and differences from other work
33 published or previously submitted.

34 **Title Page.** The title page should include the following information:

35 ▪ Author(s) names

36 ▪ Academic degrees

- 1 ▪ Institution
- 2 ▪ Email and phone number
- 3 ▪ Keywords (up to 5)
- 4 ▪ Total number of manuscript words, tables, figures, appendices, and references.
- 5 ▪ Any financial disclosures and/or conflicts (if none, specify none)

6 **Abstracts.** Abstracts should be structured with brief statements, as outlined above, specific to the manuscript
7 category for which you are submitting. *Do not include p values in abstracts.*

8 **Manuscripts** should follow the arrangements detailed below.

9 *Headings.* Introduction, Objective, Methods, Results, Discussion, Conclusion, Acknowledgements.

10 *Subheadings.* One subheading or subtitle per section is acceptable in research articles. Excessive subheadings
11 will be removed during the copyediting phase.

12 *Introductions* should provide the context for the article, the objective of the study, and the hypothesis or
13 research question, how and why the hypothesis was developed, and why it is important. It should not exceed 3
14 paragraphs.

15 *Methods* should include study design or type of analysis and dates/period of study, details of the sample (eg,
16 participants and setting from which they were drawn, inclusion/exclusion criteria), outcome measures or
17 observations, and statistical analysis. This section should be written in the past tense voice.

18 *Results* should be specific and relevant to the research hypothesis. Characteristics of the study participants
19 should be followed by the presentation of results. Do NOT include implications or weaknesses of the study in
20 this section but include validation measures if conducted as part of the study. Results should not discuss the
21 rationale for the statistical procedures used. Data in tables and figures should NOT be duplicated in the text.
22 See Standardization of Statistical Reporting.

23 *Discussion* should be a formal consideration and critical examination of the study. The research question or
24 hypothesis should be addressed. Results should be compared or contrasted to those of other studies. Limitations
25 and generalizability of the results should be discussed, as well as mention of unexpected findings with suggested
26 explanations. Type of future studies needed, if appropriate, should be mentioned.

27 *Conclusion* should include only conclusions directly supported by results, considering limitations but
28 avoiding speculation and overgeneralization. The conclusion should also indicate whether additional study is
29 required before the information should be used, along with giving equal emphasis to positive and negative
30 findings of equal merit. Conclusions clearly articulate how the findings could impact student learning or the
31 Academy.

32 *Acknowledgments* should appear after the conclusion or summary of the manuscript and explicitly state what
33 the person being acknowledged has contributed to the manuscript. Funding/support and any other disclosures
34 should also be included in this section.

35 **References.** The *Journal* follows the AMA Manual of Style for references. Whenever appropriate, authors
36 should include citations relevant to the topic of the manuscript that appear in education-focused journals and

1 other health profession-based publications. Excessive over-citation of articles from the *Journal* or reiterations
2 of well-established historic literature should be avoided, as well as excessive self-citations. Studies mentioned
3 in text should be referred to with author(s)' names (eg, "Smith and colleague's study/review"), not with phrases
4 such as "A recent study/review." References should be listed in numerical order.

5 *Examples of AMA References:*

6 1. *Journals. Online:* Gatwood J, Hohmeier K, Farr G, Eckel S. A comparison of approaches to student
7 pharmacist business planning in pharmacy practice management. *Am J Pharm Educ.* 2018;82(5):Article 6279.
8 <https://www.ajpe.org/doi/pdf/10.5688/ajpe6279>. Accessed July 14, 2018.

9 2. *Journals. Print:* Gatwood J, Hohmeier K, Farr G, Eckel S. A comparison of approaches to student
10 pharmacist business planning in pharmacy practice management. *Am J Pharm Educ.*
11 2018;82(5):Article 6279.

12 3. *Books. Online:* Katzung BG, Trevor AJ. *Basic & Clinical Pharmacology.* 13th edition. New York,
13 NY: McGraw-Hill Education; 2015. [https://www.amazon.com/Basic-Clinical-Pharmacology-Bertram-](https://www.amazon.com/Basic-Clinical-Pharmacology-Bertram-Katzung/dp/0071825053)
14 [Katzung/dp/0071825053](https://www.amazon.com/Basic-Clinical-Pharmacology-Bertram-Katzung/dp/0071825053). Accessed July 14, 2018.

15 4. *Books. Print:* Wells BG, DiPiro JT, Schwinghammer TL, DiPiro CV. *Pharmacotherapy Handbook.*
16 10th edition. New York, NY: McGraw-Hill Education; 2017.

17 5. *Websites.* American Association of Colleges of Pharmacy. ALFP program and session
18 overview.<https://www.aacp.org/resource/alfp-program-and-session-overview>. Accessed July 14, 2018.

19 **Tables.** Tables should not duplicate information provided in the text. Instead, tables should provide additional
20 information that illustrates or expands on a specific point the author wishes to make.

- 21 ■ Include detailed, self-explanatory titles to make the table stand alone.
- 22 ■ Tables should not break across pages but please avoid using page breaks.
- 23 ■ Tables should be numbered using Arabic numbers following the order to which they are referred to in
24 the text.
- 25 ■ Tables should be created using Microsoft Word table formatting tools and should be in Times New Roman,
26 10-point type, with footnotes in 9-point type (do NOT use the tab key to form rows and columns of data as tab
27 information is lost when the document is processed by the publisher).
- 28 ■ Except for lines to separate the title from the column headings, the column headings from the data, and the
29 bottom row of data, do not include interior lines.
- 30 ■ See Table Guidelines.

31 **Figures.** The *Journal* only accepts only black & white figures. Figures should be numbered using Arabic
32 numbers, based on the order in which they are presented in the text. Figures must be legible to readers. Include
33 detailed, self-explanatory titles to make the figure stand alone. Large and/or high- resolution graphic image
34 files, saved as TIFFS, should be uploaded to Editorial Manager as separate files from the manuscript text (which
35 should be a Word file). See Figure Guidelines.

1 **Appendices.** Should come at the end of the manuscript. All quotations within the body of the manuscript should
2 be moved to the appendices.

3 **IRB.** For all manuscripts reporting on research involving human subjects, the author must upload to Editorial
4 Manager all relevant institutional review board (IRB) letters, which should indicate the research has been
5 reviewed and approved by the appropriate human research or ethics review committee, or that it has been
6 exempted from such review. For research that has undergone such review and approval, a statement to that
7 effect also should be included in the manuscript methods section.

8

9 **STYLISTIC CONSIDERATIONS**

10 Style specifications for the Journal must be thoroughly followed. Below are general guidelines for manuscript
11 format and style. If in doubt about style, refer to the American Medical Association (AMA) Manual of Style or
12 consult a recent issue of the Journal.

13 **Word Style.** Consult a current edition of Webster's dictionary for guidance on spelling, compounding, and
14 word separation. Foreign words, not in general use, should be italicized. For proper use of chemical and
15 biochemical terms, mathematical equations and expressions, special symbols, subscripts, superscripts, or Greek
16 letters, please refer to the AMA Manual of Style.

17 **Capitalization.** When the word "journal" is capitalized and italicized as Journal, it can refer only to the
18 American Journal of Pharmaceutical Education. In scientific writing, always capitalize the following:

- 19 ▪ Major words in titles and headings of manuscripts, designators for tables, figures, and appendices (eg,
20 Appendix 1)
- 21 ▪ Eponyms (but not the noun that follows them, eg, Gram stain, Babinski sign)
- 22 ▪ Names of tests (eg, Beck Depression Inventory)
- 23 ▪ Genus names of organisms (but not the name of species, varieties or subspecies)
- 24 ▪ Acts of legislation (eg, Medicare)
- 25 ▪ Awards (eg, NobelPrize)
- 26 ▪ Proprietary names (eg, Xeroxcopier)
- 27 ▪ The title of a person when followed by the person's
28 name (eg, Chair John W. Jones)
- 29 ▪ Official names of organizations and institutions (eg, Centers for Disease Control and Prevention)
- 30 ▪ Geographic places (eg, United States of America)
- 31 ▪ Sociocultural designations (eg, Republicans, French
32 people)
- 33 ▪ Historical events (eg, Vietnam War)

34 *These words should not be capitalized when not followed by or part of a proper name (eg, University, School,*
35 *Dean). Disciplines (eg, pharmacy practice or pharmaceutical science) should not be capitalized unless used in*
36 *a proper name.*

1 **Abbreviations.**

- 2 ▪ Avoid using abbreviations in manuscript titles.
- 3 ▪ Spell out or define abbreviations and acronyms on first use.
- 4 ▪ Avoid makeshift abbreviations.
- 5 ▪ In instances where repeated use of an organization or chemical name would become awkward, an official or
6 accepted abbreviation may be substituted.
- 7 ▪ The abbreviation should be placed in parentheses immediately following the first use of the name *in the main*
8 *body of the text.*
- 9 ▪ Abbreviations of common pharmaceutical associations or organizations do not require periods or spaces
10 between letters (eg, AACP).
- 11 ▪ Abbreviations of “eg,” and “ie,” and “et al” should not be separated by periods.
- 12 ▪ The names of countries and US states should be spelled out when they stand alone (eg, “...pharmacists
13 throughout the United States...”).
- 14 ▪ The abbreviation “US” may be used as a modifier only when it directly precedes the word it modifies (eg,
15 US health care). Otherwise, it should be spelled out.
- 16 ▪ The names of all other cities, states, provinces, and countries should be spelled out when they occur within
17 the text of the article.
- 18 ▪ Abbreviations deemed “dangerous” or “forbidden” by the Joint Commission and/or the Institute for Safe
19 Medication Practices should be avoided (eg, QD, SC, SQ).
- 20 ▪ Refer to the AMA Manual of Style for additional rules regarding abbreviations.

21 **Numbers.**

- 22 ▪ Numbers 0-9 should be written out in general.
- 23 ▪ In statistical text, Arabic numeral can be used if appropriate.
- 24 ▪ Arabic numerals should also be used with designators (eg, week 1, cohort 2).
- 25 ▪ Numbers 10 and up should be written as Arabic
26 numerals (unless they occur at the beginning of a
27 sentence, in which case they should be spelled out).
- 28 ▪ A number containing a decimal must be styled as an Arabic number.
- 29 ▪ All fractions must be written as decimal equivalents.
- 30 ▪ **For *p* values, do not include a leading zero to the left of the decimal point.**

31 **Measurements.** Use the metric system for all measurements; however, use conventional units instead of
32 International System of Units (SI) units. Do not use periods when abbreviating units of measure.

33 **Reference Numbers.**

- 34 • Reference numbers cited in the text of a manuscript should be in superscript Arabic numerals placed at the
35 end of the sentence, outside the final period or other punctuation.

- 1 • Reference citations should be numbered according to their order of appearance in the manuscript.
- 2 • Subsequent citations to the same reference must be indicated by the same number originally assigned to
- 3 that reference.
- 4 • Do not put parentheses around reference numbers cited in text.

6 SUBMITTING YOUR MANUSCRIPT

7 **Submit** your manuscript as a Microsoft Word file — not a PDF using the Journal’s Editorial Manager online
8 tracking system.

9 **Log in** using your username and password and then follow the step-by-step instructions for uploading your
10 files. If you do not know your username and password, send an email to ajpe@ajpe.org and a member of the
11 editorial staff will respond to you as quickly as possible.

12 **Tracking and Timeline.** You may track your submission in Editorial Manager. If it has been over 5 months
13 since your submission, and your status reads “Under Review” your submission is still awaiting a completed
14 peer-review process. (see submission process).

16 KEYWORDS

17 When submitting your manuscript, you will be asked to provide keywords related to your manuscript. Selecting
18 commonly used, yet specific terms, will assist in identification of reviewers and in searches by readers. These
19 keywords are not only used by others who are searching the Journal for articles but by the Journal’s editorial
20 team to select reviewers.

21 Potential reviewers have entered keywords associated with their focus areas which are then matched to the
22 keywords entered by the author. The use of esoteric or very broad keywords can delay successful identification
23 of reviewers or reduce potential readers of your article.

25 SUBMISSION PROCESS

26 To ensure that only accurate and substantive articles are published, all manuscripts undergo a technical check,
27 a blind peer-review process and an editorial decision.

29 TECHNICAL CHECK PROCESS

30 Each manuscript will undergo a technical review for basic formatting structure. This technical check is to ensure
31 that reviewers may spend their time expeditiously reviewing the content and quickly providing feedback to
32 specific areas of the text. **A manuscript that is not formatted and organized according to these seven
33 requirements will be rejected and returned to the author without further review.**

- 34 1. All pages must have non-continuous line numbers.
- 35 2. All pages must have page numbers.
- 36 3. Title page should follow AJPE format (see manuscript sections).

- 1 4. Abstract should follow AJPE format (see manuscript categories and requirements).
- 2 5. All references follow AMA style (in-text citations and list at end of manuscript).
- 3 6. Manuscript sections follow AJPE format (see manuscript sections).
- 4 7. Submitted items are organized according to AJPE format (see manuscript organization).

6 PEER-REVIEW PROCESS

7 If your manuscript passes the technical check process, it will move through our two-stage peer-review process.

8 **Stage One:** In this first, internal review, the editor-in- chief and/or associate editors consider the following
9 questions:

- 10 1. Is the topic addressed by the article important and of interest to faculty and administrators of pharmacy
11 or health science institutions?
- 12 2. Has the *Journal* recently published a number of articles on this same topic? If so, does this manuscript
13 add something new?
- 14 3. Is the paper written clearly? Is it logically consistent?
- 15 4. For research papers (including briefs, if applicable), is the study size adequate? Is the research design
16 appropriate and sound? Are the results appropriately interpreted? Is the topic original?

17 Manuscripts failing to meet these basic criteria are not considered further for publication, while those meeting
18 the criteria at this stage proceed to Stage Two.

19 Even though the *Journal* is predominately online, space for publication is still a significant issue. Given the
20 considerable competition for space, standards for publication are high, and we expect that approximately 40%
21 of all submissions will likely be rejected at this first stage. Most manuscripts are rejected because topics are not
22 appropriate for the *Journal's* readership.

23 **Stage Two:** Authors whose manuscripts pass Stage One will not be notified; their manuscripts will simply be
24 sent out for peer review. Reviewers' guidelines can be found here. Authors should be aware that this process
25 typically takes 2-5 months.

26 The typical process involves a list of potential reviewers arranged by the assigned editor. Initially, two reviewers
27 are contacted from the list and given 7 days to respond to the request. After 7 days without responses, or if a
28 reviewer declines the review, an invitation is sent to the person next on the list who also receives 7 days to
29 respond. This process will continue until two quality peer reviews are provided, or possibly more per the
30 assigned editor's discretion.

31 To allow time for reviewers to respond can prolong an individual manuscript's review time considerably,
32 sometimes taking several months for editors to find enough reviewers (see keywords).

34 EDITORIAL DECISION

35 Once peer review is complete, the editor or associate editor assesses the manuscript and the reviewers'
36 assessment to make a final decision.

1 This editorial decision may be to accept, to accept with a revision required (major or minor), or to reject the
2 paper.

3 A request for revision does not guarantee a manuscript will be accepted; rather, it allows the authors to improve
4 the manuscript for further consideration. Often, a manuscript will be sent for an additional round of peer review
5 at this point.

6

7 PUBLICATION AHEAD OF PRINT

8 Once accepted, a manuscript will be published “in press” as an e-publication ahead-of-print (PAP). Our editors
9 will lightly format your accepted article with the goal of making your article appear format-ready for
10 publication. No changes will be made to the content or context of the work itself unless they are minor proofing
11 or grammatical changes. Author approval is not required at this time.

12 Once articles are lightly formatted, they are sent to our production vendor who will prepare a draft article and
13 publish it to our website on the “Publication Ahead of Print” webpage.

14 Authors will then be notified that their article is now in press and will receive a digital object identifier (DOI).
15 The PAP process takes approximately 2 weeks to 1 month from the official acceptance to publication in press.

16

17 COPYEDITING STAGE

18 Prior to publication in the regular, final issue, but typically a significant amount of time after a manuscript is
19 accepted, all manuscripts are copyedited for organization, style, and clarity. If our editors determine that your
20 manuscript requires substantial copyediting, you may be asked to make another revision or pay an outside
21 vendor to get the paper up to acceptable standards.

22 The corresponding author will receive the copyedited version approximately 1 to 4 weeks prior to the
23 scheduled publication date. The corresponding author will have 2 business days to review the edits and make
24 any changes. Any extensive, substantial, or minor changes to titles or other parts of a manuscript must be
25 made at this stage.

26 All *Journal* style and formatting changes made to the manuscript by our editorial staff must be retained.

27

28 PROOFING STAGE

29 The corresponding author will receive an email with a link to an online galley proof (eProof) for review
30 approximately 10 days prior to publication. Extensive edits including routine rephrasing of sentences or new
31 additions are NOT permitted at this stage. Any new revision may be denied or assessed a fee. Alterations should
32 be restricted to corrections of data or to serious changes in interpreting the text caused by editorial
33 error. The Journal allows authors 2 business days to return eProofs.

34

35

36

1 COPYRIGHT FORM

2 Manuscripts submitted to the Journal should be unpublished and not under consideration elsewhere. Under the
3 terms of the Copyright Revision Act of 1976 (Public Law 94-533), it is necessary to have the rights of the
4 authors transferred to the publisher to provide for the widest possible dissemination of professional and
5 scientific literature. The editorial office must receive this form before a manuscript can be published. A link to
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