# Follow-up Report
# on the Doctorate Programme in Data Science,
# Loyola University Andalusia

## 1. NORMATIVE SCOPE

According to the provisions in article 27 of Royal Decree 1393/2007, October, 29, regulating official university education, concerning the implementation of education corresponding to official degrees, the evaluation bodies determined by the autonomous communities Law will conduct the follow-up of the project detailed in the plan of studies verified by the Universities Council, with the peculiarities included in Royal Decree 99/2011, January, 28, regulating official doctoral education.

The Andalusian Knowledge Agency, in accordance with the provisions by the Andalusian Law on Science and Knowledge 16/2007, December, 3, has been assigned the competences for evaluation and accreditation of universities activities. The Andalusian Knowledge Agency Direction for Evaluation and Accreditation has provided the standards and guidelines necessary for the follow-up evaluation of doctorate programmes implementation.

The Doctoral Follow-up Commission designated by the the Andalusian Knowledge Agency Direction for Evaluation and Accreditation, formed by experts in this field, and acting in a regime of independence and autonomy, has the competences for the follow-up evaluation of the Andalusian official doctorate programmes implementation.

## 2. REPORT OBJECTIVE

Loyola University Andalusia applied for the follow-up evaluation previous to the accreditation renewal of:

| | |
|---|---|
| **ID Ministry** | 5601208 |
| **Degree Denomination** | Doctorate Programme in Data Science, Loyola University Andalusia |
| **University** | Loyola University Andalusia |
| **Centre** | Doctoral School (Córdoba) |

## 3. EVALUATION CONTENT

The Doctoral Follow-up Commission issued this report as a result of the aforementioned official degree follow-up evaluation. This evaluation is based on the programme follow-up self-assessment report, Call 2018, and the follow-up procedure established by DEVA.

### 3.1 Available Public Information

*Improvable*

A complete version of the Verified Report is not available in the Degree website, so that all the relevant information on this Degree is not unified. On the other hand, the lack of information on teaching staff academic and research experience in each of this Degree lines of research. Additionally, there is not avalaible information in the Degree website on international mobility actions,  therefore, students have to access to the Doctoral School webpage to find such information missing in the Degree website.

The analysis of the recommendations included in the follow-up self-assessment report as follows:

- It is recommended to publish the admission commission composition and function. RESOLVED.

- It is recommended to publish on the website: Codes ISCED 1 and ISCED 2. ISCED 1:Maths and Statistics. ISCED 2: Computer Sciences. It is recommended the mistake in ISCED 1 correction. RESOLVED.

- It is recommended to publish this Degree Verified Report. ATTENDED. In the Doctoral School wepage can be found this Degree Verified Report, whereas in the Degree own website is missing, therefore, it is also recommended to provide a unified information at the Degree webpage.

- It is recommended to publish information on teaching staff research experience in the three lines of research comprising this Doctorate Programme, number of six-year terms and last six-year term date (active), active research projects, doctoral theses, etc,. ATTENDED. Undetailed individual information provided on this issues, just globally on research groups.

The recommendations attended but unresolved are maintained till compliance, as well as others deriving from this evaluation process:

**Recommendations:**

- It is recommended to publish this Programme Verified Report.

- It is recommended to publish the information concerning teaching staff research experience in the three lines of research comprising this Doctorate Programme, number of six-year terms and  last six-year term date (active),  doctoral theses directed, active research projects, etc,.

- It s recommended to include a link at the Degree website to the international mobility actions published on the Doctoral School webpage, as they are relevant for this Degree.

- It is recommended to publish the Programme Improvement Plan at the website.

### 3.2 Quality Assurance System Implementation

*Improvable*

According to the follow-up self-assessment report this second year the Internal Quality Assurance System (SIGC) has been launched and consolidated by a follow-up of this Degree indicators  for this second year of implementation. It has been also mentioned in the self-assessment report that all the procedures included in SIGC have been implemented, except the Degree expiration. Documentary evidence on the different procedures implementation have been provided, except for the procedure P.3 EDUCATION AND TEACHING STAFF QUALITY ASSURANCE EVALUATION AND IMPROVEMENT: due to a failure in the computer platform for data collection, the activities outcomes could not be registered and collected. It is confirmed in the self-assessment follow-up report that the Degree indicators are being revised and implemented as well as a proposal for improvement consisting of the launching of a procedure on teaching staff quality follow-up; the development of a document management tool at the University intranet, which has been tested for the 16/17 year with a positive result, however with no evidence provided, and therefore it was not valued.

Among the documentary evidence provided, there is no accreditation on the Quality Assurance Commission periodical meetings, given that there have been just two meetings within a period of twenty days: 06/12/17 and 07/04/17, it can not be considerd as periodicity of meetings. It could not be valued whether the information is analysed contributing to quality improvement in this meetings because there are no evidences provided and the tool for document management is not accessible where, according to the self-assessment report, the meetings minutes are included.

Concerning the academic commission and the dates indicated on the webswite, they meet periodically. However, its performance can not be evaluated given that the meetings minutes were not provided or accessible either.

The following recommendations were included in the follow-up self-assessment report:

- It is recommended to publish the list of current research projects. RESOLVED.
- It is recommended to update the list of defended Doctoral theses. RESOLVED.

- It is recommended to publish the list of doctoral theses projects approved and on-going in this programme, the number of theses directed by each professor, the doctoral student and the year when the doctoral thesis got started in order to estimate its duration and end date. RESOLVED.

- It is recommended the Doctoral Programme Academic Commission and the SIGC Commission meetings´ traceability, by writing up the minutes and agreements, actions and proposals for improvement. ATTENDED. It can not be verified given that the minutes are not available.

The attended but unresolved recommendations are maintained till compliance, as well as others derived from this evaluation process:

**Recommendations:**

- It is recommended the Doctoral Programme Academic Commission and the SIGC Commission meetings´ traceability, by writing up the minutes and agreements, actions and proposals for improvement.
- It is recommended to finish the development and implementation of a tool for document management on the Degrees quality assurance follow-up, as well as that the future self-assessment reports provided the access to the document management system to evaluators for the correct assessment.
- It is recommended to provide the Doctoral Programme Academic Commission and the SIGC Commission meetings minutes in successive self-assessment reports, in order to valuate its correct performance.
- It is recommended to deploy all the planned tools for the Degree expiration procedure.

**Recommendations for special follow-up:**

- It is recommended to deploy and implement properly the procedure P.3 EDUCATION AND TEACHING STAFF QUALITY EVALUATION AND IMPROVEMENT, as well as the teaching staff evaluation accreditation through ANECA´s DOCENTIA programme.

### 3.3 Programme Implementation Process

*Improvable*

Taking into consideration the content of the 2016/2017 Self-assessment Follow-up Report, the conclusion is the Doctoral Programme is implemented and developed in accordance with the provisions included in the verified report. According to the self-assessment report the Internal Quality Assurance System has been implemented and consolidated with a follow-up

of the Degree indicators for this second year of implementation. Additionally, the activities related to doctorate students research education were also consolidated and reinforced, by providing seminars and, for the first time, doctorate students sessions, organised by the Doctoral School.

According to the Verified Report, the number of places offered to new students is 25, whereas the number of new enrolments was 11 in the year 2015/2016 and in the academic year 2016/2017 there were 22 applications and 16 enrolments in the Doctoral Programme. It is verified the number of first enrolments grew and, as it is mentioned in the follow-up report, it is planned to keep on working to increase the number and achieve the verified value.

The 2017/18 educational offer is published at the Degree website, nevertheless it is not accessible the 2016/17 academic offer which is now submitted for follow-up. In the self-assessment follow-up report, some conferences presented in 2016/17 are mentioned, but without indicating the assigned credits nor the transversal activities.

DEVA Doctoral Commission accepted modifications for educational activities in 04/26/2017. As the complete information on the 2016/17 academic year is not accessible, it is not possible to value whether these changes were taken into account. Considering the 2017/18 academic offer, published on the website, the following educational activities, included in the verified report, have not been found within the offer:

- [Course] Java Programming I

- [Course] MatLab Programming I

- [Course] Java Programming II

- [Course] MatLab Programming II

- [Course]  Stata Programming

- [Course]Datamining and computational analysis  with Weka and NNEP: classification models and decision trees (100h)

- [Course ] Datamining analysis and computational with Weka and NNEP: Artificial Neural Networks, regression and grouping models (100h).

Regarding these last two courses on datamining, there is just a 30 h course published on the website within the educational offer: Datamining and computational analysis with Weka and Knime.

- [Course] Advanced Statistical and/or computational models: regression (100h).

- [Course] Advanced Statistical and/or computational models: classification (40h).

- [Course] Advanced Statistical and/or computational models: time series (40h).

AS far as these three courses is concerned, just a 30h course can be found  within the educational offer published:  Advanced Statistical and/or computational models.

-[Course] Causal Modeling

-[Seminars] Faith and Reason Dialogue

-[Seminars] Finance and entrepreneurship database

-[Seminars] Surveys and panel data analysis

With respect to supervision and follow-up of doctorate students, it is indicated in the self-assessment follow-up report a students´ activities registration control has been developed, as well as their data certification and the Annual Research Plan valuation, verifying that doctoral students have developed their research plans in accordance with the provisions in current normative. It can be verified at the Degree website the tutors and directors´ assignation to 6 doctoral students in 2015 and 13 in 2016. Additionally, in the self-assessment follow-up report, it is confirmed that during the Degree second year, it was implemented the tutorial action and support Plan for doctoral students, with the aim of improving tutoring supervision, counselling and support to doctoral students.

The analysis of the recommendations included in the follow-up self-assessment report as follows:

_ It is recommended to follow-up the enrolments evolution over the academic years to evaluate the impact of the strategies for improvement designed to increase the number of enrolments. ATTENDED. It is indicated in the self-assessment report that it is IN-PROCESS, moreover it is confirmed the first year follow-up has been conducted, the indicator improved, and that it is necessary analysing this evolution in future years.

The attended but unresolved recommendations are maintained till compliance, as well as others derived from this evaluation process:

**Recommendations:**

- it is recommended to follow-up the evolution of enrolments through the academic years to evaluate the impact of the strategies for improvement designed to increase the number of enrolments.

- it is recommended to plan and organise the educational activities established in the verified report and in the report modified in 2017, which have not been accomplished yet.

- it is recommended to improve the doctorate programme internationalisation, which will allow a quality improvement, focusing mainly in the increase of doctoral theses percentage

with international mention.

- It is recommended providing in future self-assessment reports the Admission Commission meeting minutes analysing the admission applications and the admission requirements applied as established in the verified report.

### 3.4 Teaching Staff

*Improvable*

Taking into account the student-teacher ratio, it is considered teaching staff is adequate for this Degree regarding its number; with 9 members, included the coordinator for the line of research in Analysis, segmentation and estimate from the short to long term, of times series, 10 researchers, included the coordinator for the line of research in computational intelligence, and others 9 members, included the coordinator in the line of research Statistical and econometric models, which is does not agree with the commitment of researchers provided in the verified report. It is also indicated in the self-assessment report that two new teachers in the programme would increase the active six-year terms ratio per teacher, the number of RDI projects per line, and the number of active RDI projects per line, however there is no information on these teachers in the Degree website for any line of research.

According to the information published in the Degree webpage, there is at least one active project in all the lines of research, financed through competitive announcements.

The analysis of the recommendations included in the follow-up self-assessment report as follows:

- It is recommended to include in successive self-assessment reports the specific educational activities for this Degree teaching staff. RESOLVED.

- It is recommended to publish the information related to current doctoral theses pojects developed in this doctorate programme, including the doctoral students´name and the year starting each doctoral thesis. ATTENDED.

- It is recommended a link to each researcher by publishing a brief CV permanently updated, including, at least, the number of five-year terms, six-year terms, date of the last six-year term, doctoral theses directed and in-process to be supervised, current research projects and publications. ATTENDED.

- It is recommended to provide information on the percentage of this Doctoral Degree teachers whose academic activity was evaluated in the framework of DOCENTIA Programme.

ATTENDED.

- This Degree teachers quality and excellence requirements must be explictly mentioned, as for example concerning active six-year terms or at least the direction of a doctoral thesis over the last years. It s recommended for successive self-assessment reports to provide information on teachers incorporations and withdrawals from this programme, according to the criteria on quality and excellence established for this doctorate programme. ATTENDED.

The attended but unresolved recommendations are maintained till compliance:

**Recommendations:**

- It is recommended to publish the information related to current doctoral theses projects developed in this doctorate programme, including the doctoral students´name and the year starting each doctoral thesis.

- It is recommended a link to each researcher by publishing a brief CV permanently updated, including, at least, the number of five-year terms, six-year terms, date of the last six-year term, doctoral theses directed and in-process to be supervised, current research projects and publications.

**Recommendations for special Follow-up:**

- It is recommended to provide information on the percentage of this Doctoral Degree teachers whose academic activity was evaluated in the framework of DOCENTIA Programme.

- This Degree teachers quality and excellence requirements must be explitly mentioned, as for example concerning the active six-year terms or at least the direction of a doctoral thesis over the last years. It is recommended for successive self-assessment reports to provide information on teachers incorporations and withdrawals from this programme, according to the criteria on quality and excellence established for this doctorate programme.

### 3.5 Infrastructures, services and resources allocation

*Satisfactory*

According to the self-assessment follow-up report for the academic year 2016/17, infrastructures and resources are adequate for the provision of this doctoral programme. Additionally, it is also indicated the teachers and students´ high degree of satisfaction with infrastructures, services and resources allocation for the three lines of research; a specific agreement in the scope of the Doctorate of Data Sciences has been signed with the Autonomous University of Chile and another one with the Carolina Foundation for the cooperation in education between Southamerican and Spanish doctoral students. It is confirmed that both agreements will increase the percentage of foreign students next year. It is aldo affirmed that 26% of the programme doctoral students have realised research stays in leading international centres improving their lines of research, and for that purpose the university has provided financial support to allow them a proper and adequate stay abroad.

**Recomendaciones:**

-it is recommended to increase the number of new collaboration agreements which might

increase the number of enroled students.

**Recommendations for Special Follow-up:**

-Information on professional and academic counselling services (scholarships, mobility, research, etc,.) must be published at the doctoral programme website.

### 3.6 Indicators and Outcomes

*Improvable*

The evolution is considered adequate, excepting the following cases concerning students degree of satisfaction: Information on the international mobility system (4,82/10), Information on International Mention, Industrial Doctorate and/or co-tutoring (3,71/10). It is not adequate the evolution of the percentage of sudents in the line of research Analysis, segmentation and estimation in the short and medium terms, of temporal series, from 27% to 8%.

It can not be verified the consistency with all the estimates established in the verified report for all the indicators, given that no reference values were established for most indicators provided in the self-assessment report. Just in the case of the dropout rate, estimated a 25% in the verified report and it has been lower in the two courses provided and it was reduced in the year 2016/17. Likewise concerning places offered (25), most of them were covered (23).

It should be underlined the positive scientific contributions and it is expected to meet compliance regarding the reference value estimated in three years.

In the 2016/17 self-assessment report, under evaluation, there are missing surveys results on the educational activities, which were provided in the 2015/16 self-assessment report.

The analysis of the recommendations included in the follow-up self-assessment report as follows:

- It is recommended for future self-assessment reports to provide updated information on the indicators description as well as its comparative through the academic years. ATTENDED.

- A special follow-up must be conducted to the number of Doctoral Theses with International Mention and the actions developed to increase this indicator for sake of the Degree quality and excellence. ATTENDED.

- It is recommended a special folow-up of satisfaction surveys by the different stakeholders given the low participation rate mainly of teaching staff and students. Additionaly, it is also recommended to survey graduates and employers, as they are stakeholders also involved in the Degree. ATTENDED.

- It is recommended to follow-up the evolution of the indicator Rate of active six-year terms

in the interest of the Degree quality and excellence. ATTENDED.

- It is recommended to follow-up the number of research projects, reduced a 50% since the course implementation and the number of contracts and RDI agreements which has been reduced by a third. ATTENDED.

The attended but unresolved recommendations are maintained till compliance:

**Recommendations:**

- It is recommended for successive self-assessment reports to provide updated information on the indicators description as well as its comparative through the academic years.

- A special follow-up must be conducted to the number of Doctoral Theses with International Mention and the actions developed to increase this indicator for sake of the Degree quality and excellence.

- It is recommended a special follow-up of satisfaction surveys from the different stakeholders given the low participation rate mainly by teaching staff and students. Additionaly, it is also recommended to survey graduates, employers, the stakeholders also involved in the Degree.

- It is recommended to develop actions to increase the value of the following indicators of students satisfaction: Information on the International Mobility System (4,82), Information in International Mention and Industrial Doctorate and/or co-tutoring (3, 71).

**Recommendations for Special Follow-up:**

- It is recommended to specially follow-up the evolution of the indicator Rate of active six-year terms for sake of the Degree quality and excellence.

- It is recommended to specially follow-up the number of research projects that since the Degree implementation year has decreased a 50% and on the number of contracts and RDI agreements which have been reduced by a third.

**3.7 Programme Improvement Plan**

*Improvable*

The self-assessment follow-up report includes a detailed improvement plan for the Degree and the responsible person for such follow-up or the proposed improvement action traceability, as well as the planning of the appropriate corrective actions to be executed within 2, 4 or 6 months deadline. The procedure to be used for all the actions is a generic one (Checklist), excepting the case concerning the improvement actions to increase the number of registered students.

**Recommendations for Special Follow-up:**

- The improvement plan, its analisys, revision and enhancement procedures must be updated in successive self-assessment reports.

### 3.8 Follow-up of the recommendations made in the verified report as possible recommendations made in the modification report

The recommendations included in the verification report are resolved.

- The provided link to the normative for permanence is not operating. An operational link must be provided, including information on the normative for permanence and a definition of full and part time students. The link provided in the self-assessment follow-up report to the admission and permanence rules is not operating. RESOLVED.

- Concerning the change of Director, thesis Tutor must be replaced by thesis Director, given that on the change of Director must be heard the director and the doctoral student instead of the tutor and the doctoral student. It is confirmed in the self-assessment follow-up report the Degree Academic Commission has approved this recommendation and therefore it will be included in the next modification. RESOLVED.

There are no followed-up modifications in this report regarding this Degree before 2017. The only modifications evaluation report was submitted in April, 2017. It is an Unfavourable report accepting just some of the modifications required.

## 4. CONCLUSIONS

This degree was verified in 2014, implemented in 2015/16 and it was applied for modification in 2017. The modification report issued in April, 2014 is Unfavourable given that just some of the modifications applied for were approved. There is also a 2015 follow-up report and another one in 2017 for the academic year 2015/16. The academic year 2016/17 is currently under follow-up review.

According to the self-assesment follow-up report, the Internal Quality Assurance System (SIGC) has been implemented during this second year and the Degree indicators for this second year of implementation have been followed-up. It has been confirmed in the self-assesment follow-up report that all the procedures included in the SIGC were implemented, excepting the Degree expiry date.

**List of recommendations / special follow-up recommendations related to criteria**

1. Available Public Information:

Recommendations:

- It is recommended to publish the Programme Verified Report.
- It is recommended to publish information on the teachers research experience in the three lines of research of this Doctoral Programme, the exact number of six-year terms and the date of the last active one, Doctoral theses directed, Doctoral theses in process, active research projects, etc.
- It is recommended to provide a link at the Degree website to the international mobility actions published in the Doctoral School webpage which are relevant for this Degree.
- It is recommended to publish the Programme Improvement Plan on the website.


2. Quality Assurance System Implementation:

Recommendations:

- It is recommended the traceability of the Doctoral Academic Commission and the SIGC Commission meetings, writing up the minutes and agreements, actions for improvement and proposals.
- It is recommended to develop and implement a document management tool for the Degrees quality follow-up and that successive self-assessment reports the access to the document management system is porvided in order to allow evaluators and adequate valuation.
- It is recommended to provide the Doctoral Academic Commission and the SIGC Commission meetings minutes in successive reports, in order to valuate its correct functioning.
- It is recommmended to display the estimated tools in the Degree expiry procedures.

Recommendations for Special Follow-up:

- It is recommended to display and implement correctly the procedure P.3 EDUCATION AND TEACHING STAFF EVALUATION AND IMPROVEMENT and the accreditation of teaching staff evaluation by the ANECA programme DOCENTIA.


3. Programme Implementation Process

Recommendations:

- It is recommended to follow-up the enrolments number evolution through the academic years to evaluate the impact of the designed strategies for improvement to increase the number of registered students.
- It ir recommended to plan and organise the educational activities established both in the verified and the modified reports in 2017, which have not been developed.
- It is recommended to enhance the doctoral internationalisation plan which will result in an improvement in quality, with a special emphasis on the percentage of Doctoral Theses with international mention.
- It is recommended to provide in successive self-assessment reports the Admission Commission meetings

minutes analysing the admission applications and applying the admission criteria established in the verified report.

4. Teaching Staff:

Recommendations:

- It is recommended to publish the information related to Doctoral Theses projects within this doctoral programme, including the doctoral students names and the year of every doctoral thesis start.
- It is recommended a link to each researcher including public information on a brief CV permanently updated, at least the number of five-year and six-year terms, date of the last six-year term, Doctoral Theses directed and in process, current research projects and publications.

Recommendations for Special Follow-up:

- It is recommended to include information on the percentage of teachers whose academic activity has been evaluated within the framework of the programme DOCENTIA.
- It is recommended to make explicit the quality and excellence criteria to be met by teachers, as for example to have an active six-year term or at least the direction of a Doctoral Thesis over the last years. It is recommended to provide in successive self-assessment reports information on new teachers recruitment or resignation, taking into account the criteria on quality and excellence established for this Doctorate Programme.

5. Infrastructures, services and resources allocation:

- It is recommended to increase the number of new collaboration agreements to rise the number of registered students.

Recommendations for Special Follow-up:

- It is recommended to publish information on academic (scholarships, mobility, research, etc.) and professional counseling on the website .

6. Indicators and outcomes:

Recommendations:

- It is recommended to provide updated and detailed information on the indicators and its comparative through academic years in successive reports.
- It is recommended to follow-up specially the evolution of the number of Doctoral Theses with international mention and the actions to increase this indicator for the sake of this Degree quality and excellence.
- It is recommended a special follow-up of the different stakeholders satisfaction surveys due to their low

participation rate mainly by teachers and students. It is also recommended to survey graduates and employers, the stakeholders involved in the Degree as well.

- It is recommended to develop actions  to increase the value of the following indicators: students satisfaction degree, information on the international mobility system (4,82), information on international mention, industrial Doctorate and/or co-tutoring (3,71).

Recommendations for Special Follow-up:

- It is recommended the special follow-up of the evolution of the indicator active six-year terms rate in the interest of the programme quality and excellence.
- It is recommended a special follow-up on the number of research projects which since the programme implementation year decreased by 50% and the number of RDI contracts and agreements reduced by a third.

7. Programme Improvement Plan:

Recommendations for Special Follow-up:

- It is recommended to provide an updated  information on the improvement plan and its analysis, revision and enhancement procedures in successive self-assessment reports.

**This follow-up report has the aim of providing information to help universities enhancing quality in the official degrees implementation.**

**Córdoba, July, 20,  2018**

**Doctoral Follow-up Commission**