

*Original Research Article*

# Feasibility Study on the Offering of Master of Science in Biology (M.Sc. Biology)

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## Abstract

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Feasibility study has become an imperative approach to evaluate possible program offering in Higher Learning institutions. The University of Northern Philippines offers Bachelor of Science in Biology as one of its undergraduate programs under the College of Arts and Sciences. The program has been awarded the Certificate of Program Compliance (COPC) by the Commission on Higher Education. The Accrediting Agency of Chartered Colleges and Universities of the Philippines, Inc. (AACCUP) has granted Level IV to the program, which is the highest level of program accreditation. In the context of quality pursuit, vertical articulation in program offerings is still wanting, hence this study determined the feasibility of the offering of MS Biology. Majority of the respondents signified interest to enrol in the MS Biology program of the University of Northern Philippines; the proposed offering of MS Biology meets the minimum standards as set by the Commission on Higher Education, as per CMO No. 6, series of 2011; and the offering of MS Biology is feasible from the five aspects of feasibility study: market, technical, financial, economic, and management.

**Keywords:** Feasibility, Financial, Market, Management, MS Biology

## INTRODUCTION

To provide competent human resources in the Philippines and beyond, remains the mandate of higher education institutions in the country. Given the manpower demands from the industries and budgetary resources of universities, rationalization of program offerings has become a crucial management concern. According to Winters (2014), as budgets become increasingly strained with every passing year, higher education institutions are turning to market research firms to investigate the viability of their current and potential academic programs. Many institutions require feasibility research as part of the program approval process and for good reason.

Feasibility study has become an imperative approach to evaluate possible program offering in Higher Learning institutions. In fact, the Commission on Higher Education requires feasibility study of every program proposed to be

offered in colleges and universities in the country.

According to De Luna and Motin (2015) with the inevitable challenges posited externally like amalgamation, ASEAN2015, climate change among others, the University is pressed to renew the time-honored core values and commitment to persistently strive for a "cut above" relevant learning inputs to clienteles across disciplines. The commitment resonates the mandate of the University in producing professional leaders in advanced education, sciences and technology, information technology, agriculture, fisheries and forestry through applicable programs and instructions and sustaining accreditation processes across campuses. It also includes a in providing fair and affordable access to higher learning and new ideas based on the needs and prevailing demands in the global market.

Graduate education is an advanced training or schooling beyond the undergraduate degree. It leads to a mastery of a certain discipline or a specialized field, which prepares students to become leaders in their chosen fields and contributes to the rapidly changing global community.

CMO No. 06 series of 2011, sets the Policies and Standards for Graduate Programs in Biology. The M.Sc. program in Biology is an advanced-level program for students aspiring to work or currently working in an academic, research or industrial setting. The graduates are expected to: grasp advanced knowledge in the basic areas of biology; have the ability to keep abreast with new developments in science and technology; apply computational methods, and appropriate experimental designs and analyses, in research problems of biology; recognize and solve meaningful research problems in biology; and have the ability to write and present orally a scientific paper.

The University of Northern Philippines offers Bachelor of Science in Biology as one of its undergraduate programs under the College of Arts and Sciences. The program has been awarded the Certificate of Program Compliance (COPC) by the Commission on Higher Education. The Accrediting Agency of Chartered Colleges and Universities of the Philippines, Inc. (AACUP) has granted Level IV to the program, which is the highest level of program accreditation.

In the context of quality pursuit, vertical articulation in program offerings is still wanting. There are only two State Universities in the Region which offer MS Biology, the Mariano Marcos State University (MMSU) and the Don Mariano Marcos Memorial State University (DMMMSU). BS Biology students, teachers and instructors who want to pursue MS Biology still go as far as Benguet State University and others to pursue the course. With the implementation of the K-12 program, Biology subjects have been offered in the Junior High School (Life Science) and General Biology I and II in the Senior High School.

This feasibility study is deemed necessary to offer the vertical articulated master's degree program for BS Biology graduates in the University and neighboring provinces. Further, it will be an avenue for instructors who have not taken their masters in biology, to further enhance their knowledge and skills on biological concepts and new trends in biology teaching.

### Objectives of the Study

The main objective of this study is to determine the feasibility of offering a Master of Science in Biology. The specific objectives are:

a. Determine the demand in terms of prospective enrollees who will signify their interest in the survey;

b. Present a simple supply analysis in terms of schools offering MS Biology;

c. Present the program specifications in terms of faculty, library, facilities and equipment, admission, grade and residency, graduation requirements, and curriculum components.

d. Present a simple analysis on the financial and economic aspects.

e. Present the management aspect and proposed organizational structure.

### METHODOLOGY

The study used the descriptive-survey method of research. Interviews through social media like messenger and facebook were employed to determine whether or not the respondents are interested to enroll in MS Biology at the University of Northern Philippines. Through quota sampling, 25 from the three groups were set with a total of 75 respondents. These groups comprised of BS Biology graduating students from the University of Northern Philippines (UNP) and Abra State Institute of Science and Technology (ASIST), Biology instructors from junior and senior high schools, and higher education institutions in the region, and BS Biology alumni of the Ilocos Sur and Abra.

Documentary analysis was used to determine if the University meets the standards as set by the Commission on Higher Education, as per CMO for MS Biology.

### RESULTS AND DISCUSSION

#### On Demand Analysis

The demand is determined by the prospective enrollees composed of those who signified their interest in the survey. Table 1 presents the distribution of respondents who are interested to enroll in MS Biology in UNP.

Based on the table, the majority (53; 70.67%) of the respondents signified interest to enroll in the MS Biology program of the University of Northern Philippines.

#### On Supply Analysis

The determinants of supply are the schools offering MS Biology. At present, there are five Higher Education Institutions in Region I offering MS Biology.

Table 2 presents the Higher Education Institutions in Region I and CAR offering Master of Science in Biology

It can be gleaned from Table 2 that there are only four (4) Higher Education Institutions offering MS Biology for the entire Region I and CAR (3 SUCs and 1 Private HEI), hence the offering of the course in UNP is needed to cater to the BS Biology graduates who graduate from

**Table 1.** Distribution of respondents who are interested to enroll in MS Biology in UNP

Group	Yes		No	
	f	%	f	%
A. Graduating BS Biology students from UNP and ASIST	15	60.00	10	40.00
B. Biology Instructors from HEIs in the region	13	52.00	12	48.00
C. BS Biology Alumni in Ilocos Sur and Abra	25	100.00	-	-
Over-all	<b>53</b>	<b>70.67</b>	<b>22</b>	<b>29.33</b>

**Table 2.** HEIs in Region I offering MS Biology

Province/City and HEI			Category	Miscellaneous fees	Tuition fee per unit	Total fee for 9 units	Location	Distance from Vigan City in terms of travel time
ILOCOS NORTE								
Mariano Marcos University	State	State University		P590.00	P200.00	P1,800.00	Batac	1 ½ hrs
LA UNION								
Don Mariano Marcos Memorial State University	State	State University		P3,075.00	P300.00	P2,700.00	Agoo	4-5 hrs
BAGUIO CITY								
Benguet State University		State University		P1,056.00	P350.00	P3,150.00	La Trinidad	5-6 hrs
Saint Louis University		Private University		P5,000.00	P1,400.00	P12,600.00	Baguio City	5 -6 hrs

Ilocos Sur and Abra, and teachers/instructors of Biology, and other professionals who also want to enroll in graduate studies.

### On Technical Aspect

This section analyses the alignment of the curriculum with the standards of the Commission on Higher Education, as per CMO No. 6, series of 2011. It also determines the adequacy of faculty members who can teach in the proposed program, in terms of number and qualifications, the adequacy of library resources and facilities, and other requirements as per CMO.

### Faculty

Article VI, section 10 of CMO No. 6, series of 2011 prescribes the minimum faculty requirement for the implementation of the program. There shall be a minimum of five (5) full-time faculty members consisting of two (2) Ph.D. and three (3) MS Degree holders in at least three specialized areas of biology.

There are three (3) MS Biology degree holders among the core faculty members of the Biology program, One (1) Ph.D. in Science Education major in Biology, and one(1)

Ph.D. in Science Education major in Biology on dissertation writing. There are two licensed veterinarians among the core faculty who will teach Animal Physiology subjects.

### Library

The library acquisitions, and other instructional materials being used in the BS Biology Program shall be shared with the proposed MS Biology Program. E-books acquired by the core faculty members can also be used by the students, hence there is an adequacy of books and other supplementary materials needed in the program, which will be used for instruction and research purposes.

### Facilities and Equipment

The laboratory requirements of the Biology program have been complied with, as evidenced by the Certificate of Program Compliance (COPC) awarded to the program, and as evidenced by the accreditation visits conducted on the program. Hence all laboratory facilities used by the BS Biology shall also be used by the MS Biology students.

**Table 3.** Components of the curriculum for the MS Biology program

Program	Components	Number of Units
Master of Science in Biology	Biology Core Courses	15
	Biology Specialty Courses	6
	Elective	3
	Seminar	1
	Biology MS Thesis	6
	<b>Total</b>	<b>31</b>

Aside from the laboratory requirements, there is provision in the College for the preparation, presentation, and viewing of audio-visual materials to support instruction.

### On Admission

Applicants for admission to the MS Biology program must be holders of a bachelor's degree or its equivalent.

### Grade and Residency Requirement

The minimum residency for MS Biology is two (2) years.

### On Graduation Requirements

The student must pass the comprehensive examination and successfully defend his/her thesis.

### On Curriculum

The components of the curriculum for the MS Biology as per CMO No. 6, series of 2011 is presented in Table 3. In summary, the proposed offering of MS Biology meets the minimum standards as set by the Commission on Higher Education, as per CMO No. 6, series of 2011.

### Financial Aspect

This section presents the result of the financial analysis of the proposed program offering. The analysis aims to determine the financial viability of the proposed program offering under given assumptions.

### Expenses

The University will not hire additional faculty members, since the Biology program core faculty meets the minimum requirements per CMO No. 6, series of 2011. Likewise, no additional classrooms are required because classes will be conducted during weekends at the

College of Arts and Sciences building. No additional laptops or LCDs will be purchased because there are newly purchased equipment at the college, including the BS Biology program, which will also be used in the proposed program offering. However, additional books of recent editions will be purchased.

### Revenues

The revenues that will accrue to the university will come from the tuition fees of the students who will enroll in the proposed program.

Table 4 and 5 present the assumptions for the financial analysis with respect to expenses and assumptions for the financial analysis with respect to revenues, respectively.

### Assumptions

Fees per term = P2,765.00 (Source: UNP Accounting Office)

Tuition fee (12 units @ P120.00/unit) P1,440.00

Miscellaneous fee 635.00

Journal/Vision fee 150.00

Mutual Aid Fund 40.00

Student Development fee 300.00

Quality Assurance fee 200.00

Sub-total P2,765.00

Number of terms  $\times 2$

**Total fees P5,530.00**

No increase for the first three (3) years

Projected enrollees per academic year (very conservative estimate)

School Year 2019 – 2020 - 30 students

School Year 2020 – 2021 - 60 students

School Year 2021 – 2022 - 90 students

### Income Aspect

The economic feasibility of the proposed program offering is evaluated by calculating whether the value of the

**Table 4.** Assumptions for the financial analysis with respect to expenses

Items	Amount per Annum	Remarks
Expenses		1 section x 6 units = 6 hrs/week x 18 weeks = 108 hours x 300.00/hr
Salaries	P64,800.00	In 1 year
	P129,600.00	In 2 years
	P194,400.00	In 3 years
Supplies	P5,000.00/annum	In 1 year; increase of 3,000 per year
Library and facilities	P9,000.00/annum	In 1 year, increase of 4,500 per year
Utilities	P5,000.00/annum	In 1 year; increase of 500 per month

**Table 5.** Assumptions for the financial analysis with respect to revenues

School Year	Projected No. of Enrollees	Fees	Projected Revenues
2019-2020	30	P5,530.00	P165,900.00
2020-2021	60	P5,530.00	P331,800.00
2021-2022	90	P5,530.00	P497,700.00
Total			P995,400.00

**Table 6.** Income statement

Particulars	Year		
	1	2	3
Revenues			
Fees	165,900.00	331,800.00	497,700.00
Expenses			
Salaries	64,800.00	129,600.00	194,400.00
Supplies	5,000.00	8,000.00	11,000.00
Library & Equipment	9,000.00	13,500.00	18,000.00
Maintenance	2,250.00	3,375.00	4,500.00
Utilities	5,000.00	11,000.00	17,000.00
Total	86,050.00	165,475.00	244,900.00
Net Savings	79,850.00	166,325.00	252,800.00
Retained Savings	-	86,050.00	252,375.00
Net Income (current)	86,050.00	166,325.00	252,800.00
Retained Savings	-	252,375.00	505,175.00

resources to be created by investment is greater than the resources to be consumed.

Table 6 shows the income statement. At the end of year 3, the retained earnings for the university will amount to P505,175.00.

### Unquantifiable benefits

It must be noted that there are also benefits that cannot be quantified or assigned monetary values such as:

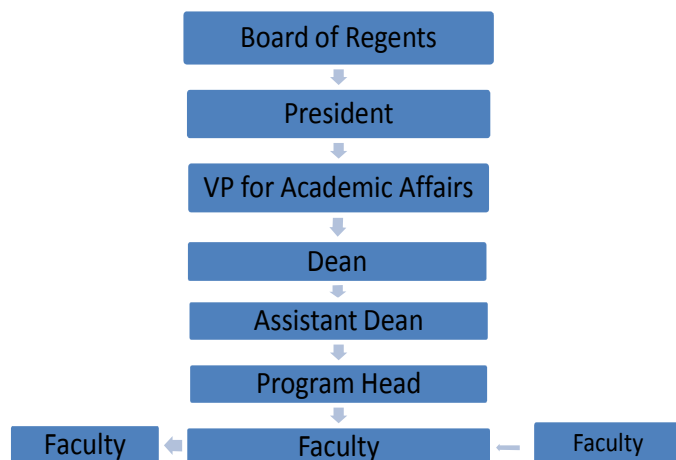
- Decreases the tendency of mismatch between manpower demand and supply;
- Revitalizes curricular offering in the light of vertical articulation;
- Higher level of service among biologists/biology educators

### Management Aspect

The MS Biology program will be headed by the Program Head who is under the supervision of the Dean of the College of Arts and Sciences. The general functions and responsibilities of the program head are as follows:

- Exercise academic leadership among the faculty members;
- Adopt curricular programs on the current trends and developments in education and practice of profession;
- Assigns the subjects to qualified faculty members;
- Monitors the attendance and performance of the faculty members;
- Promotes scholarly research and relevant extension activities/programs;
- Maintains local and international linkages with relevant research and academic institutions/agencies.

### Proposed Organizational Structure



### CONCLUSION

The offering of MS Biology is feasible from the five aspects of feasibility study: market, technical, financial, economic, and management.

### RECOMMENDATION

The researchers strongly recommend for the approval of the offering of MS Biology by the Board of Regents for the School Year 2019-2020.

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