EVALUATION OF CAREER PATTERNS OF ACADEMIC STAFF IN A FACULTY IN THE UNIVERSITY OF BENIN, NIGERIA

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ABSTRACT

This paper examines the passage of academic staff in a faculty using an absorbing Markov chain. Two cases involving regardless of staff leaving intentions and staff unwillingness to leave are considered. Findings reveal that when the latter is the case, staff will look forward to staying perpetually in the system. On the case involving regardless of staff leaving intentions, expected waiting time for each grade in each department in the faculty is established while suggestions are made to prospective applicants.

Keywords **—** Absorbing Markov Chain; Academic Staff; Career Pattern; Grade; Faculty.

INTRODUCTION

Career pattern is concerned with the passage of individuals through an organizational system. In any planning associated with organizational systems, there is a need to assess the impact of promotion and recruitment as this coupled with little or no attrition and the bargaining power of trade unions can have an unprecedented increase on the wage bill of the organization (Ekhosuehi and Osagiede, 2006). Consequent upon this, organizations do revise the criteria for promotion by introducing indices such as seniority and performance measure (Raghavendra, 1991). In some circumstances, organizations may downsize the entire workforce. Earlier, Osagiede *et al.,* (2007) proposed a mathematical model for stagnating staff at a particular grade so as to avoid the agony associated with a downsizing policy in manpower systems.

In the University of Benin, Nigeria, vacancies in any department are filled either by promotion from among serving employees of the university or by appointment after an advertisement and interview. Academic members of staff are promoted in accordance with the regulations governing the service of senior staff in the university. The productive abilities of academic staff are assessed based on the individual's level of educational attainment and evidence of continued research and additional publications. A book or an article published by a university press or a journal recognized by the University of Benin is accepted for the purpose of appointment or promotion of an academic staff (UBSSR, 2003). Normally the minimum number of years required for promotion from one level to another is three years (no approximation). Nonetheless, where staff shows exceptional academic brilliance, the staff may be allowed accelerated promotion (which is a minimum of two years).

Categories of academic staff in the university encompass – graduate assistant, assistant lecturer or assistant research fellow, lecturer II or research fellow II, lecturer I or research fellow I, senior lecturer or senior research fellow, associate professor and professor. These categories (hereafter referred to as grades) form the transient states of the university manpower system. A transient state is a state where upon entering the process may never return to the state again. The grades in the system are transient states because all movements will be towards absorption and away from the grades. The system also contains an absorbing state. An absorbing state is a type

of state in which upon entering the state, it is not possible to go to another state in the future. The absorbing state in the system encompasses all forms of wastage. Wastage may be voluntary resulting from lack of promotion prospects and resignations, or involuntary due to termination of appointment, redundancy, ill-health, death, dismissal and retirement.

The Faculty of Physical Sciences is one of the prestigious faculties in the University of Benin. The faculty is created from the then Faculty of Science in the 2004/2005 academic session. The faculty consists of five departments, viz.: Chemistry, Computer Science, Geology, Mathematics and Physics. It is expected that graduates from the faculty will be sufficiently grounded in the basic scientific principles and equipped with adequate knowledge of applications towards meeting the yeaning needs of the society.

This paper is motivated on the feeling by academic staff that a claim for promotion has been overlooked. An event as this is a major cause of squabbles in the system. This is because the affected staff members, who may be oblivious of the promotion criteria, are discontented.

The key theoretical underpinnings of this paper are borrowed from Bartholomew *et al.*, (1991). The approach is centred on modelling career patterns as an absorbing Markov chain. The theory of absorbing Markov chain is available in most standard texts on stochastic processes and one of them is Ibe (2009). Transition probabilities of the Markov chain are estimated using the maximum likelihood method (Zanakis and Maret, 1980). Subsequently, the fundamental matrix and the mean stay vector are computed. The utility of the absorbing Markov chain in modelling career patterns is illustrated using academic staff flows in the Faculty of Physical Sciences, University of Benin, Nigeria.

It is important to study career patterns of academic staff so as to determine the expected time before promotion as well as the expected time spent in the system. This study is relevant to academic staff, researchers, prospective applicants and members of Appointment and Promotion Board of the University.

METHODOLOGY

We denote the grades of academic staff enumerated in Section 1 as the set $S = \{1, 2, \ldots, k\}$, in ascending order, where 1 stands for graduate assistant and for professor. The states are assumed to be mutually exclusive since each staff may be in one and only one grade at any given period. The forms of wastages are aggregated into a single state. The state is denoted by the number, .

Let be the number of staff flow from grade i to grade in period and be the number of staff leaving grade i in period . The flows are assumed to be governed by transition probabilities and the grades are assumed to be independent with respect to those probabilities. Flows from a grade are considered as a random variable with a multinomial distribution as in Eq. (1) (Vassiliou, 1976).

$$P(n_{i0}(t), n_{i1}(t), \ldots, n_{ik}(t)) = \frac{\left[\sum_{j=0}^{k} n_{ij}(t)\right]!}{\prod_{j=0}^{k} (n_{ij}(t))!} \prod_{j=0}^{k} (p_{ij}(t))^{n_{ij}(t)}, \quad (1)$$

In Eq. (1), $p_{ij}(t)$ is the probability of a staff flow from grade i to grade in period and is the probability of a staff leaving grade i in period .

The transition probabilities are estimated using the maximum likelihood method described in Zanakis and Maret (1980). Moreover, the transition probabilities are assumed to be homogeneous so that the pooled estimates and are used respectively instead of the estimates $\hat{p}_{ij}(t)$ and $\hat{p}_{i0}(t)$.

$$\mathbf{A} = \begin{array}{c} \\ \text{Nonabsorbing} \\ \\ \text{Absorbing} \end{array} \begin{array}{c} \begin{array}{cccccc} \text{Nonabsorbing} & & & & \text{Absorbing} & \end{array} \\ \begin{bmatrix} \hat{p}_{11} & \hat{p}_{12} & \cdots & \hat{p}_{1k} & \vdots & \hat{p}_{10} \\ \hat{p}_{21} & \hat{p}_{22} & \cdots & \hat{p}_{2k} & \vdots & \hat{p}_{20} \\ \vdots & \vdots & \ddots & \vdots & \vdots & \vdots \\ \hat{p}_{k1} & \hat{p}_{k2} & \cdots & \hat{p}_{kk} & \vdots & \hat{p}_{k0} \\ \cdots & \cdots & \cdots & \cdots & \cdots & \cdots \\ 0 & 0 & \cdots & 0 & \vdots & 1 \end{bmatrix} \end{array} , \quad (2)$$

In the light of the foregoing, let **A** be a $(k+1)\times(k+1)$ absorbing Markov chain having one absorbing state with a block structure of the form in Eq. (2) such that

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We determine the expected time before promotion of and the expected time spent in the system by an academic staff in twofold. First is the case regardless of staff leaving intention. To do this, let **P** be a $k\times k$ transition matrix among the transient states, i.e., such that

$$\sum_{j=1}^{k} \hat{p}_{ij} \le 1, \ \hat{p}_{ij} \ge 0, \ i, j \in S.$$

Then the fundamental matrix (**FM**) and the mean stay periods (**MS**) are obtained using the formulas and $(\mathbf{I}-\mathbf{P})^{-1}\mathbf{e}$, respectively, where **e** is a $k\times 1$ vector of ones and is a identity matrix. The element in the th row and th column of **FM** is the expected length of time that a staff entering grade will ultimately spend in grade .

Bartholomew *et al.*, (1991) posited that the off-diagonal elements in **FM** are of little interest in themselves since they are not conditional on reaching grade j, whereas the (, j)th diagonal element gives the (conditional) time in this grade for grade entrants.

Let be the elements of **FM**. Whenever

$$0 \le \lim_{\ell \to k} \sum_{j=1}^{\ell} f_{ij} \le \mathcal{L}_i, \ i \in S,$$

where $\mathcal{L}_i$ is the normal career length for entrants into grade i, then each row of **MS** is the expected time spent in the system before leaving and after entry to the grade corresponding to the row. Conversely, when

,

then it takes an unlikely protracted time to leave at least one of the states. In particular, if the state is a grade $i < k$, then such a state is a clog in the career path. Furthermore, when

,

then there is no movement out of at least one $i \in S$. The result is due to $\hat{p}_{ii} = 1$ for at least one i. The upshot of is the inversion problem of matrix singularity to working precision. The inversion problem can be evaded by either allowing the system to evolve for additional periods and then re-compute the transition parameters or omitting the row(s) and column(s) corresponding to the entry $\hat{p}_{ii} = 1$ in **P** and then re-compute **FM** based on the new sub-matrix of **P**. The sum $\lim_{\ell \to k} \sum_{j=1}^{\ell} f_{ij}$ is used as a point of reference instead of the summand f_{ij} so as to circumvent the time lag in the notification of promotion.

Second is the condition that staff is unwilling to leave the system. This consideration is justifiable as the working condition in the faculty is conducive and members of staff in the university are among the highest paid workers in the geographical region where the university is located. Besides, we assume here that decisions on leaving are made at the beginning of the year and that staff considered for promotion are selected from among those who have not indicated their intention to leave. In this case, staff may not only attain the completed-length-of-service, but also benefit from contract appointment in the system. To evaluate how long it takes for

promotion therefore, we divide each row of **P** by its sum, i.e.,

$$\mathbf{P}^* = \left(\hat{p}_{ij} \Big/ \sum_{j=1}^{k} \hat{p}_{ij} \right)_{i,j \in S}.$$

In this case, the new fundamental matrix is

$$\mathbf{FM}^* = (\mathbf{I} - \mathbf{P}^*)^{-1}.$$

RESULTS AND DISCUSSION

Data on academic staff flows in the Faculty of Physical Sciences are obtained from the faculty's prospectus from 2005/2006 to 2011/2012 academic sessions. The data are presented in Tables I – V (see Appendix). In the tables a dash signifies a zero entry. The flows satisfy:

$$\sum_{j=1}^{7} n_{ij}(t) = n_{i,i}(t) + n_{i,i+1}(t), \text{ and}$$

$$\sum_{j=1}^{7} n_{ji}(t) = 0, \text{ for } j > i.$$

Computations of **FM** and **MS** and the corresponding schematic displays are done in the MATLAB computing environment. Foremost, we consider the case regardless of staff leaving intention. Results for this case are displayed in Figure 1 with five sub-plots D1 – D5. The heights of the bars are obtained from diag(**FM**) while the stairs are obtained from the **MS** vectors.

The maximum session for which data are available is the 2011/2012 session. This session falls within the period when the retirement age was 65 years for all grades of academic staff. We opined that, in the period under review, the maximum career length for the university system does not exceed 35 years. In consequence, we set the normal career length as:

years,

where is the retirement age and is the expected age of new entrants into grade . However, information on was not readily available as at the time of collecting the data. For this reason, we assume that the normal career length is strictly monotone decreasing of the form: .

It is possible to evaluate the career patterns in the Faculty from Figure 1. The resulting career patterns are interpreted below and suggestions are made to applicants with the requisite qualifications.

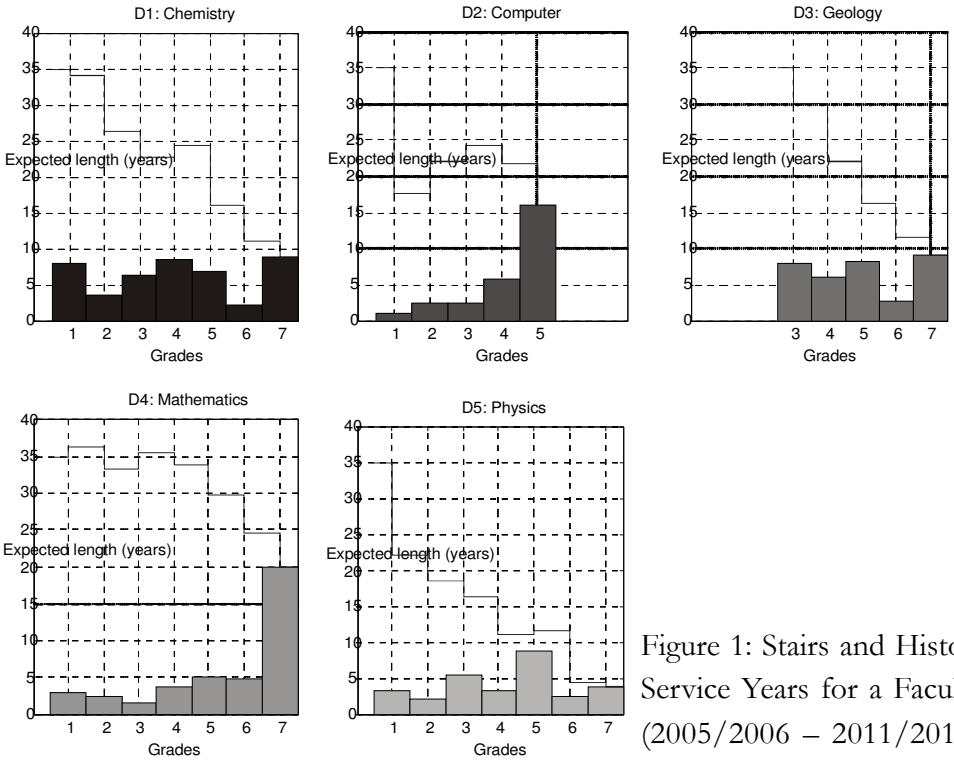

Figure 1: Stairs and Histograms of Expected Service Years for a Faculty Academic Staff (2005/2006 – 2011/2012).

Sub-plots	Discussion	Suggestion to applicants
D1	The waiting period for $i=1$ is over 5 years, indicating that, on average, graduate assistants spend over the stipulated maximum of 4 years in the department. However, this result should be taken with caution as the only staff left in that grade is on leave of absence and has already obtained M.Sc. By the regulations governing the service of senior staff in the university, staff on leave of absence is not eligible for promotion. This may be the reason the concerned staff is stagnated in that grade. The waiting period for $i=2$ is what we should expect. For $i=3,4,5$, the waiting period far exceeds the stipulated minimum of 3 years. Thus the prospect of staff to the highest grade is lowered. The waiting period for $i=6$, although above 2 years, is below 3 years. This may be due to the time lag in the notification of promotion. None of the grades violates the maximum career length of 35 years.	It is advisable to apply for the position of assistant lecturer or associate professor if vacancy exists.
D2	Presence of at least one absorbing state among the grade levels, i.e., no movement out from at least one grade during the periods under consideration. The grades are identified to be $i=6,7$. Using a sub-matrix of $\mathbf{P}$ obtained by deleting the corresponding rows and columns of $i=6,7$, we found that the average waiting periods for $i=1,2,3$ are below 3 years. Nevertheless, the waiting period for $i=1$, which is below 2 years, should be taken with caution as no sufficient data was available for the position of graduate assistant. The waiting period for $i=5$ is too long. The grades $i=1,2,3,4,5$ do not violate the maximum career length of 35 years.	It is advisable to apply for the position of assistant lecturer or lecturer II if vacancy exists.
D3	The grades $i=1,2$ are absorbing. Deleting the corresponding rows and columns, a sub-matrix of $\mathbf{P}$ is obtained. Using the sub-matrix of $\mathbf{P}$, we found that the waiting periods for $i=3,5$ far exceeds the stipulated minimum of 3 years. In all, the waiting time for $i=6$ is the shortest. The grades $i=3,\cdots,7$ do not violate the maximum career length of 35 years.	It is advisable to apply for the position of lecturer I or associate professor if vacancy exists.
D4	The career pattern in D4 is very stimulating. The waiting time for $i=1,4,5,6$, is what we should expect. The waiting time for $i=2$ is below 3 years. This implies that staff at this grade may enjoy upgrading to grade 3. The waiting time for $i=3$ is below 2 years. This may be due to the time lag in the notification of promotion. Grade 1 violates the maximum career length of 35 years. This may be an indication that an employee into grade $i=1$ possibly will expect contract appointment.	Career pattern is fantastic. Applicants may apply to any grade if vacancy exists.
D5	The waiting time for $i=1,3,4$, is what we should expect. The waiting time for $i=2$ is below 3 years. This implies that staff at this grade may enjoy upgrading to grade 3. The highest waiting time is in grade 5. The waiting period for $i=6$, which is below 3 years, may be due to the time lag in the notification of promotion.	It is advisable to apply for the position of graduate assistant, assistant lecturer or lecturer I if vacancy exists.

Next, we consider the case of staff's unwillingness to leave. The estimation of each of **FM** and **MS** returns infinity for each department. This means that staff will look forward to staying perpetually in the system. The implication of this is that an increase in career length and retirement age is in the interest of staff in the faculty.

Currently, the retirement age for the professorial grade is 70 years (as against 65 years prior to the year 2012) and the length of service of 35 years no longer hold for academic staff. In this case, we assume that every recruit into the faculty academic workforce will aspire to reach the professorial grade. Accordingly, the normal career length becomes: $\zeta_i = (70 - \wp_i)$ years for the university system. Consider when years for new entrants into at least one grade i. Then years (i.e., academic staff will stay longer in the faculty). Since the latter finding has revealed that staff will look forward to staying perpetually in the faculty, the university management is likely to contend with the higher wage bill resulting from the extension of length-of-service and the possibility of having a top-heavy manpower structure in some of departments, e.g. the Department of Mathematics.

$\wp_i < 35$

CONCLUSION

In this paper the career patterns of academic staff in the Faculty of Physical Sciences in the University of Benin have been considered. The fundamental matrix of the absorbing Markov chain is utilized in examining the expected time spent at each grade of the academic structure. Results indicate that if the present trend is allowed to continue, then the career patterns would favour fresh graduates with a minimum of second class honours (upper division) who are employed into the Department of Mathematics or Physics. Applicants with PhD without teaching experience may opt for the Department of Chemistry, Computer Science, Mathematics or Physics. The career patterns are favourable to applicants to Department of Geology who already have PhD with cognate teaching and research experience. The major accomplishments of this study include: finding the expected waiting time for each grade in every department in the faculty and the use of the results as a yardstick to inform prospective applicants. On the overall, what we view as the most promising extension of this study is the investigation of career patterns based on specific work performance measurements of a echelon manpower system.

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REFERENCES

Bartholomew, D. J., Forbes, A. F., and McClean, S. I., 1991. *Statistical techniques for manpower planning* (2nd ed.). John Wiley & Sons, Chichester.

Ekhosuehi, V. U. and Osagiede, A. A., 2006. Wage model for a firm in a minimum wage scenario. *Global Journal of Mathematical Sciences* 5(2): 153-159.

Ibe, C. O., 2009. *Markov processes for stochastic modelling*. Elsevier Academic Press, Burlington, USA.

Osagiede, A. A., Ekhosuehi, V. U. and Osagiede, F. E. U., 2007. Avoiding staff retrenchment in manpower organisations. *The Journal of the Mathematical Association of Nigeria (abacus)* 34(2A): 107-112.

Raghavendra, B. G., 1991. A bivariate model for Markov manpower planning systems. *The Journal of the Operational Research Society*, 42(7): 565-570.

UBSSR, 2003. *Regulations governing the service of senior staff*. Registrar's Office, University of Benin, Benin City.

Vassiliou, P. C. G., 1976. A Markov chain model for wastage in manpower systems. *Operational Research Quarterly* (1970-1977), 27(1, Part 1): 57-70.

Zanakis, S. H. and Maret, M. W., 1980. A Markov chain application to manpower supply planning. *Journal of the Operational Research Society*, 31: 1095-1102.

APPENDIX

Stocks and Flows of Academic Staff in the Faculty of Physical Sciences

Table I: Stocks and Flows of Academic Staff of the Department of Chemistry

2006/2007

2005/2006	GA	AL	LII	LI	SL	AP	P	W	Stock
GA	02	-	-	-	-	-	-	-	02
AL	-	01	-	-	-	-	-	-	01
LII	-	-	03	-	-	-	-	-	03
LI	-	-	-	03	-	-	-	-	03
SL	-	-	-	-	08	-	-	-	08
AP	-	-	-	-	-	01	-	-	01
P	-	-	-	-	-	-	09	-	09
R	-	-	-	-	-	-	-		
Stocks	02	01	03	03	08	01	09		

2007/2008

2006/2007	GA	AL	LII	LI	SL	AP	P	W	Stock
GA	01*	01	-	-	-	-	-	-	02
AL	-	01	-	-	-	-	-	-	01
LII	-	-	03	-	-	-	-	-	03
LI	-	-	-	03	-	-	-	-	03
SL	-	-	-	-	08	-	-	-	08
AP	01	-	-	-	-	01	-	-	01
P	-	-	-	-	-	-	08	01	09
R	01	-	-	-	-	-	-		
Stocks	01	02	03	03	08	01	08		

2008/2009

2007/2008	GA	AL	LII	LI	SL	AP	P	W	Stock
GA	01*	-	-	-	-	-	-	-	01
AL	-	02	-	-	-	-	-	-	02
LII	-	-	03	-	-	-	-	-	03
LI	-	-	-	03	-	-	-	-	03
SL	-	-	-	-	08	-	-	-	08
AP	-	-	-	-	-	01	-	-	01
P	-	-	-	-	-	-	05	03	08
R	-	-	-	-	-	-	01^		
Stocks	01	02	03	03	08	01	06		

2009/2010

2008/2009	GA	AL	LII	LI	SL	AP	P	W	Stock
GA	01*	-	-	-	-	-	-	-	01
AL	-	-	02	-	-	-	-	-	02
LII	-	-	03	-	-	-	-	-	03
LI	-	-	-	02	01	-	-	-	03
SL	-	-	-	-	04	04	-	-	08
AP	-	-	-	-	-	-	01	-	01
P	-	-	-	-	-	-	05	01	06
R	-	-	-	-	-	-	-		

2010/2011

2009/2010	GA	AL	LII	LI	SL	AP	P	W	Stock
GA	01*	-	-	-	-	-	-	-	01
AL	-	-	-	-	-	-	-	-	01
LII	-	-	02	02	-	-	-	-	04
LI	-	-	-	01	01	-	-	-	02
SL	-	-	-	-	03	01	-	-	05
AP	-	-	-	-	-	04	-	-	04
P	-	-	-	-	-	-	06	-	06
R	-	01	-	-	-	-	-		
Stocks	01	01	02	03	04	05	06		

2011/2012

2010/2011	GA	AL	LII	LI	SL	AP	P	W	Stock
GA	01*	-	-	-	-	-	-	-	01
AL	-	01	-	-	-	-	-	-	01
LII	-	-	02	-	-	-	-	-	02
LI	-	-	-	03	-	-	-	-	03
SL	-	-	-	-	04	-	-	-	04
AP	-	-	-	-	-	-	05	-	05
P	-	-	-	-	-	-	06	-	06
R	04	02	-	01	-	-	01^		
Stocks	05	03	02	04	04	00	12		

Table II: Stocks and Flows of Academic Staff of the Department of Computer Science

		2006/2007							
		GA	AL	LII	LI	SL	AP	P	W
2005/2006	GA	-	03	-	-	-	-	-	01
	AL	-	02	03	-	-	-	-	-
	LII	-	-	-	04	-	-	-	-
	LI	-	-	-	05	-	-	-	-
	SL	-	-	-	-	01	-	-	-
	AP	-	-	-	-	-	-	-	-
	P	-	-	-	-	-	-	01	-
	R	-	01	03	-	-	-	-	
	Stocks	00	06	06	09	01	00	01	

		2007/2008							
		GA	AL	LII	LI	SL	AP	P	W
2006/2007	GA	-	-	-	-	-	-	-	-
	AL	-	06	-	-	-	-	-	-
	LII	-	-	05	01	-	-	-	-
	LI	-	-	-	09	-	-	-	-
	SL	-	-	-	-	01	-	-	-
	AP	-	-	-	-	-	-	-	-
	P	-	-	-	-	-	-	01	-
	R	-	01	-	-	-	-	-	
	Stocks	00	07	05	10	01	00	01	

		2008/2009							
		GA	AL	LII	LI	SL	AP	P	W
2007/2008	GA			-	-	-	-	-	-
	AL	-	05	-	-	-	-	-	02
	LII			05	-	-	-	-	-
	LI	-	-	-	10	-	-	-	-
	SL			-	-	01	-	-	-
	AP			-	-	-	-	-	-
	P			-	-	-	-	01	-
	R	-	01	-	-	-	-	-	
	Stocks	00	05	05	10	01	00	01	

		2009/2010							
		GA	AL	LII	LI	SL	AP	P	W
2008/2009	GA	-	-	-	-	-	-	-	-
	AL	-	01	04	-	-	-	-	-
	LII	-	-	04	01	-	-	-	-
	LI	-	-	-	08	02	-	-	-
	SL	-	-	-	-	01	-	-	-
	AP	-	-	-	-	-	-	-	-

Table III: Stocks and Flows of Academic Staff of the Department of Geology

	2006/2007								
2005/2006		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	-	-	-	-	-	-	-	-	00
	AL	-	-	-	-	-	-	-	-	00
	LII	-	-	03	-	-	-	-	-	03
	LI	-	-	-	01	-	-	-	-	01
	SL	-	-	-	-	04	-	-	01	05
	AP	-	-	-	-	-	02	-	-	02
	P	-	-	-	-	-	-	02	01	03
	R	-	-	-	-	-	-	-		
	Stocks	00	00	03	01	04	02	02		

	2007/2008								
2006/2007		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	-	-	-	-	-	-	-	-	00
	AL	-	-	-	-	-	-	-	-	00
	LII	-	-	03	-	-	-	-	-	03
	LI	-	-	-	01	-	-	-	-	01
	SL	-	-	-	-	04	-	-	-	04
	AP	-	-	-	-	-	01	01	-	02
	P	-	-	-	-	-	-	02	-	02
	R	-	-	-	-	-	-	-		
	Stocks	00	00	03	01	04	01	03		

	2008/2009								
2007/2008		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	-	-	-	-	-	-	-	-	00
	AL	-	-	-	-	-	-	-	-	00
	LII	-	-	03	-	-	-	-	-	03
	LI	-	-	-	01	-	-	-	-	01
	SL	-	-	-	-	04	-	-	-	04
	AP	-	-	-	-	-	01	-	-	01
	P	-	-	-	-	-	-	03	-	03
	R	-	-	-	-	-	-	-		
	Stocks	00	00	03	01	04	01	03		

	2009/2010								
2008/2009		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	-	-	-	-	-	-	-	-	00
	AL	-	-	-	-	-	-	-	-	00
	LII	-	-	02	01	-	-	-	-	03
	LI	-	-	-	-	01	-	-	-	01
	SL	-	-	-	-	03	01	-	-	04
	AP	-	-	-	-	-	-	01	-	01
	P	-	-	-	-	-	-	03	-	03
	R	02	01	-	-	-	-	-		
	Stocks	02	01	02	01	04	01	04		

	2010/2011								
2009/2010		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	02	-	-	-	-	-	-	-	02
	AL	-	01	-	-	-	-	-	-	01
	LII	-	-	02	-	-	-	-	-	02
	LI	-	-	-	01	-	-	-	-	01
	SL	-	-	-	-	04	-	-	-	04
	AP	-	-	-	-	-	01	-	-	01
	P	-	-	-	-	-	-	03	01	04
	R	04	-	-	-	-	-	-		
	Stocks	06	01	02	01	04	01	03		

	2011/2012								
2010/2011		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	06	-	-	-	-	-	-	-	06
	AL	-	01	-	-	-	-	-	-	01
	LII	-	-	01	01	-	-	-	-	02
	LI	-	-	-	01	-	-	-	-	01
	SL	-	-	-	-	03	01	-	-	04
	AP	-	-	-	-	-	-	01	-	01
	P	-	-	-	-	-	-	03	-	03
	R	-	-	-	-	01	-	-		
	Stocks	06	01	01	02	04	01	04		

Table IV: Stocks and Flows of Academic Staff of the Department of Mathematics

	2006/2007								
2005/2006		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	-	02	-	-	-	-	-	-	02
	AL	-	-	03	-	-	-	-	-	03
	LII	-	-	-	06	-	-	-	-	06
	LI	-	-	-	03	05	-	-	-	08
	SL	-	-	-	-	03	-	-	-	03
	AP	-	-	-	-	-	-	01	-	01
	P	-	-	-	-	-	-	03	-	03
	R	01	-	-	-	-	-	-		
	Stocks	01	02	03	09	08	00	04		
	2007/2008								
2006/2007		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	01	-	-	-	-	-	-	-	01
	AL	-	02	-	-	-	-	-	-	02
	LII	-	-	03	-	-	-	-	-	03
	LI	-	-	-	07	02	-	-	-	09
	SL	-	-	-	-	07	01	-	-	08
	AP	-	-	-	-	-	-	-	-	00
	P	-	-	-	-	-	-	04	-	04
	R	02	02	-	-	-	-	-		
	Stocks	03	04	03	07	09	01	04		
	2008/2009								
2007/2008		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	02	01	-	-	-	-	-	-	03
	AL	-	04	-	-	-	-	-	-	04
	LII	-	-	01	02	-	-	-	-	03
	LI	-	-	-	07	-	-	-	-	07
	SL	-	-	-	-	09	-	-	-	09
	AP	-	-	-	-	-	01	-	-	01
	P	-	-	-	-	-	-	03	01	04
	R	01	-	-	-	-	-	-		
	Stocks	03	05	01	09	09	01	03		
	2009/2010								
2008/2009		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	03	-	-	-	-	-	-	-	03
	AL	-	03	02	-	-	-	-	-	05
	LII	-	-	-	01	-	-	-	-	01
	LI	-	-	-	06	03	-	-	-	09
	SL	-	-	-	-	07	02	-	-	09
	AP	-	-	-	-	-	01	-	-	01
	P	-	-	-	-	-	-	03	-	03
	R	02	-	-	-	-	-	-		
	Stocks	05	03	02	07	10	03	03		
	2010/2011								
2009/2010		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	03	02	-	-	-	-	-	-	05
	AL	-	-	02	-	-	-	-	01	03
	LII	-	-	-	02	-	-	-	-	02
	LI	-	-	-	05	02	-	-	-	07
	SL	-	-	-	-	05	05	-	-	10
	AP	-	-	-	-	-	03	-	-	03
	P	-	-	-	-	-	-	03	-	03
	R	01	-	-	-	-	-	-		
	Stocks	04	02	02	07	07	08	03		
	2011/2012								
2010/2011		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	03	01	-	-	-	-	-	-	04
	AL	-	02	-	-	-	-	-	-	02
	LII	-	-	02	-	-	-	-	-	02
	LI	-	-	-	07	-	-	-	-	07
	SL	-	-	-	-	06	01	-	-	07
	AP	-	-	-	-	-	06	02	-	08
	P	-	-	-	-	-	-	03	-	03
	R	03	01	01	-	-	-	-		
	Stocks	06	04	03	07	06	07	05		

Table V: Stocks and Flows of Academic Staff of the Department of Physics

	2006/2007								
2005/2006		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	-	-	-	-	-	-	-	-	00
	AL	-	-	02	-	-	-	-	-	02
	LII	-	-	-	-	-	-	-	-	00
	LI	-	-	-	05	01	-	-	-	06
	SL	-	-	-	-	02	-	-	-	02
	AP	-	-	-	-	-	02	-	-	02
	P	-	-	-	-	-	-	02	-	02
	R	-	01	-	-	-	-	-		
	Stocks	00	01	02	05	03	02	02		

	2007/2008								
2006/2007		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	-	-	-	-	-	-	-	-	00
	AL	-	01	-	-	-	-	-	-	01
	LII	-	-	02	-	-	-	-	-	02
	LI	-	-	-	03	01	-	-	01	05
	SL	-	-	-	-	03	-	-	-	03
	AP	-	-	-	-	-	-	01	01	02
	P	-	-	-	-	-	-	-	02	02
	R	-	-	-	-	-	-	-		
	Stocks	00	01	02	03	04	00	01		

	2008/2009								
2007/2008		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	-	-	-	-	-	-	-	-	00
	AL	-	01	-	-	-	-	-	-	01
	LII	-	-	02	-	-	-	-	-	02
	LI	-	-	-	02	-	-	-	01	03
	SL	-	-	-	-	04	-	-	-	04
	AP	-	-	-	-	-	-	-	-	00
	P	-	-	-	-	-	-	01	-	01
	R	03	02	-	-	01	-	-		
	Stocks	03	03	02	02	05	00	01		

	2009/2010								
2008/2009		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	03	-	-	-	-	-	-	-	03
	AL	-	03	-	-	-	-	-	-	03
	LII	-	-	02	-	-	-	-	-	02
	LI	-	-	-	01	01	-	-	-	02
	SL	-	-	-	-	05	-	-	-	05
	AP	-	-	-	-	-	-	-	-	00
	P	-	-	-	-	-	-	01	-	01
	R	-	-	-	-	-	-	-		
	Stocks	03	03	02	01	06	00	01		

	2010/2011								
2009/2010		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	02	01	-	-	-	-	-	-	03
	AL	-	-	03	-	-	-	-	-	03
	LII	-	-	-	02	-	-	-	-	02
	LI	-	-	-	-	01	-	-	-	01
	SL	-	-	-	-	05	01	-	-	06
	AP	-	-	-	-	-	-	-	-	00
	P	-	-	-	-	-	-	01	-	01
	R	02	-	-	-	-	-	-		
	Stocks	04	01	03	02	06	01	01		

	2011/2012								
2010/2011		GA	AL	LII	LI	SL	AP	P	W	Stocks
	GA	02	02	-	-	-	-	-	-	04
	AL	-	01	-	-	-	-	-	-	01
	LII	-	-	03	-	-	-	-	-	03
	LI	-	-	-	02	-	-	-	-	02
	SL	-	-	-	-	04	01	-	01	06
	AP	-	-	-	-	-	01	-	-	01
	P	-	-	-	-	-	-	01	-	01
	R	05	-	-	-	-	-	-		
	Stocks	07	03	03	02	04	02	01		

*Graduate Assistant with M.Sc. on leave of absence.

^Professor on sabbatical treated as new a entrant.

Source:

Faculty of Physical Sciences Prospectus for Undergraduate Degree & Diploma Programmes (2005/2006 – 2011/2012 academic sessions), University of Benin, Benin City, Nigeria.

Key:

GA – Graduate Assistant;
AL – Assistant Lecturer;
LII – Lecturer II;
LI – Lecturer I;
SL – Senior Lecturer;
AP – Associate Professor;
P – Professor;
W – Wastage;
R – Recruits.