A Practical Framework for a Data-Driven Graduate Enrollment Management Plan

By Shaimaa Nabil Hassanein

Graduate schools and offices play a critical role in elevating the quality and impact of individual graduate programs. With a hybrid model of graduate administration, institutions' and graduate programs' enrollment needs are identified. Developing a graduate enrollment management plan is challenging, especially with limited prior institutional experience. This paper provides a practical framework for a data-driven graduate enrollment management plan.

Located in Egypt's capital city, the American University in Cairo (AUC) is a leading English-language, U.S.-accredited institution of higher education and center of intellectual, social, and cultural life in the Arab world. Its community of students, parents, faculty and staff, trustees, alumni, and other generous sponsors represent more than 60 countries. The university stands at a crossroad of cultures and is a vibrant forum for reasoned argument, spirited debate, and understanding across the diversity of languages, facilities, and human experiences. Graduate opportunities at AUC exist in a wide variety of disciplines and programs. AUC offers 53 master's programs and two Ph.D. programs in addition to various graduate diplomas. AUC hosts a vibrant community of 1,000 graduate students on a beautiful campus in the stimulating city of Cairo, Egypt (AUC n.d.).

AUC has set enrollment management priorities:

- Diversify recruitment by targeting underrepresented students (international, from different Egyptian governorates, and from different high schools);
- Strengthen the link between employers' needs and AUC's academic activities and curricula;
- Build a customer-service culture to support students' recruitment, retention, and success;
- Map and optimize critical business processes in the academic area;
- Support departments in managing their capacities and matching them with demand;
- Automate key processes;
- Establish and launch a mentoring program; and
- Maximize the international exposure and experience of our students and our holistic admission process.

Many universities consider whether and to what extent different enrollment management strategies should be adopted to manage graduate student enroll-

ment, especially in relation to those used for undergraduate students. While most principles are the same in undergraduate and graduate enrollment management programs/plans, the strategies and methods differ. Moreover, each plan is addressed to different pools of targeted/prospective students. One of the core differences is full-time equivalence (FTE) versus headcount in enrollment projections. It is relatively straightforward to predict headcount enrollment figures for undergraduate students, but this is not necessarily accurate for graduate students, particularly for programs that allow part-time graduate studies. In this respect, graduate student enrollment management needs to be more flexible and adaptable.

> A *hybrid model of administering graduate education is one in which a central unit oversees some aspects of graduate education while schools or central university offices have responsibility for others* (CGS 2019).

A variety of models exist for the administration of graduate education: centralized, decentralized, and hybrid. AUC utilizes a hybrid model in which the Office of the Dean of Graduate Studies (DGS) along with the offices of school deans and graduate programs play an integral role in admissions and fellowship awards as well as other academic decisions, such as extensions of study, re-admissions etc. Subsequently, DGS oversees the performance and productivity of graduate programs across schools.

DGS at AUC plays a critical role not only in elevating the performance and impact of individual graduate programs but also in promoting institutional research and its role in Graduate Enrollment Management (GEM). The mission of DGS is to oversee the offering of high-quality graduate programs and research opportunities in an academically vibrant and rigorous environment, producing scholars and leaders who will actively contribute to the socio-economic, scientific, and intellectual development of society. The "unique learning and research opportunities available will allow students to acquire and develop the skills and experiences necessary for becoming an active participant in addressing national, regional, and global challenges" (AUC n.d.).

Members of this community are to be committed to learning, research, innovation, ethical values, and leadership. DGS, in collaboration with other offices, aims to offer expertise and advice that help administrators and faculty be more successful in their efforts to recruit and support students and help programs see their work within the context of the institution as a whole.

The Office of the Dean of Graduate Studies' strategic plan outlines the following four goals in graduate education:

- Attract academically competent graduate students;
- Maintain efficient and streamlined administrative processes for graduate studies;
- Enhance a positive graduate learning experience, and
- Provide support to graduate students.

DGS Team

The Office of the Dean of Graduate Studies comprises five primary units (*see* Figure 1, on page 21).

Why GEM and Not SEM?

Strategic enrollment management (SEM) has been an established field since the 1970s. Facing a projected decrease in the number of high school graduates in the mid-1970s, forward-thinking college admissions officers coined the term "enrollment management" (EM) to describe a new approach to maintaining the number of new students they enrolled as demand decreased (Camille 2015). EM's alignment with an institution's strategic plan led to the term "strategic enrollment management" (SEM) (Balayan 2016). Since then, "leaders in the enrollment management field have consistently pushed to make data-informed and information-driven decisions a core operating principle of SEM programs" (Goff 2014, 94). Education leaders aim to implement SEM plans using a wide variety of data "to help an institution attract, enroll, and graduate a well-defined student population" (Goff 2014, 94). However, most SEM materials are concerned with institution-wide requirements with a focus on the undergraduate level.
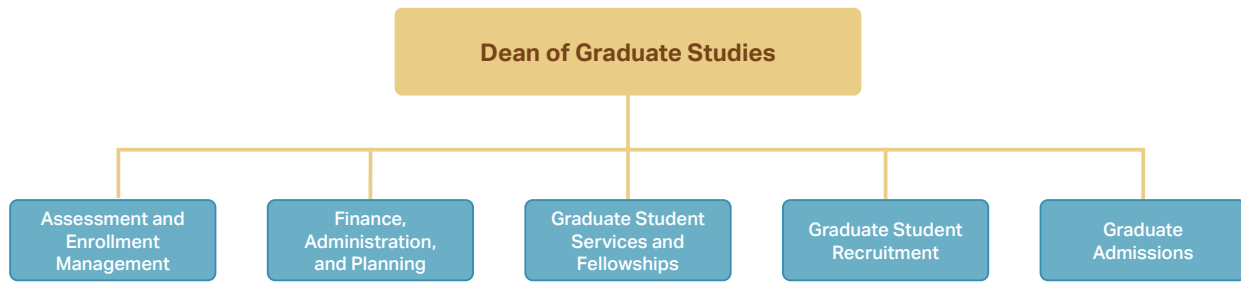
FIGURE 1 ➤ The Structure of the Office of the Dean of Graduate Studies at AUC

Efforts at the graduate level are still somewhat in the incubation phase, which makes it challenging to find competent expertise for the sake of reference. "Explorations in the graduate realm have been labeled graduate enrollment management (GEM)" since 2014 (Connor, LaFave, and Balayan 2014).

Believing in the diverse needs of graduate students as compared to those of undergraduates, DGS develops, articulates and implements a comprehensive, data-driven strategic graduate enrollment management plan that includes a focus on both recruitment and retention, aligns with the institution's strategic initiatives, and ensures a strong link between graduate student needs, institution-wide priorities, and financial planning, following in that SEM research directions, which recommend avoiding the "Silos Culture" involving the whole institution in the SEM process and integrating planning, strategies, and institutional culture (Henderson 2005). In addition, DGS evaluates programs' processes and performance toward GEM in order to offer recommendations and means of modifying any drawbacks.

DGS follows NAGAP's definition of GEM:

a systematic approach to managing the graduate student lifecycle from initial awareness to alumna/alumnus by integrating the core functions associated with the enrollment and support of a graduate student (NAGAP 2014).

Graduate Enrollment Management Framework

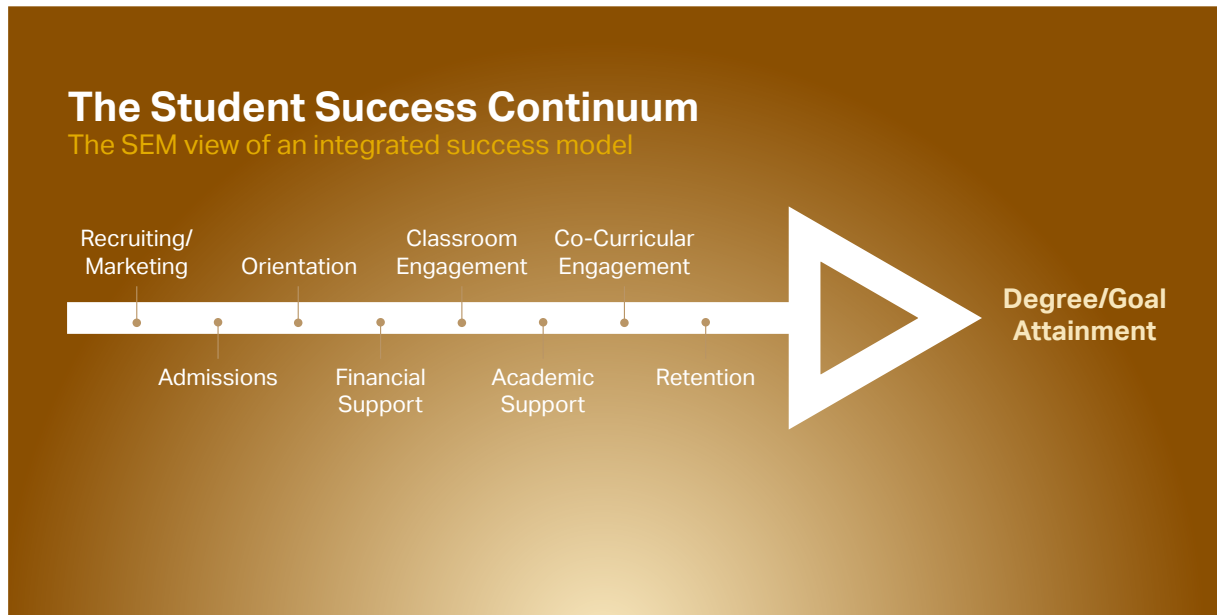In this GEM framework, assessment building blocks are:

- full-time equivalents (FTE);
- students' credit hours distribution;
- recruitment targets;
- admission yield and selectivity;
- graduation indicator;
- thesis supervision; and
- class enrollment.

Under each of the four pillars of SEM, recruitment, performance assessment, students' journey, and retention and student service lie a number of perspectives. These perspectives formulate the graduate students' journey/experience. (*See* Figure 2, on page 22.)

GEM Framework adopts the four pillars of SEM (recruitment, performance assessment, students' journey, and retention and student services) and also considers comprehensive perspectives to navigate students towards their degrees. The framework is divided into two categories: data management and assessment.

Data Management

Universities are operating in an increasingly competitive global market. Many are now combating these pressures by turning to data in an attempt to make more

The Student Success Continuum
The SEM view of an integrated success model

Recruiting/
Marketing   Orientation   Classroom   Co-Curricular
                                    Engagement   Engagement

                                                                              Degree/Goal
                                                                              Attainment

        Admissions   Financial   Academic   Retention
                          Support   Support

FIGURE 2 ➤ The Graduate Student's Journey

Source: Henderson 2017, 148

evidence-based decisions. Everything from student re-cruitment to curriculum development and partnership management has the potential to be organized more ef-fectively with the right data strategy (QS 2020).

It is noteworthy that data play an important role in the creation of enrollment management procedures by clarifying enrollment trends and providing an early alert mechanism for administrators and faculty. "En-rollment management is increasingly dependent upon information systems and technologies; it is very much a technology-intensive process and enterprise, and the development and management of student data systems is a pivotal part of any enrollment management effort" (Hossler 2013). DGS embraces a data-driven strategic graduate enrollment plan. AUC is using business intel-ligence (BI) dashboarding to collect and centralize all data for various academic aspects at the graduate and undergraduate levels. Displaying centralized data in a highly visual and easy-to-use dashboard facilitates AUC administrators' discovery of insights and sharing of data with business users through advanced analytics features.

Insights are leveraged to make evidence-based deci-sions, which lead in turn to better results for graduate studies management. DGS assessment team members delve into available data and begin to test hypotheses. Team members may analyze how fellowship funding has changed over time or evaluate which graduate pro-grams are of increasing interest. Ultimately, this leads to new ideas and serves as fodder for strategic discussions (QS 2020).

Performance assessment is fundamental at all stages, including recruitment outcomes, application, accep-tance and matriculation rates with selectivity and yield percentages, along with programs' performance, class offerings, students in the pipeline until graduation, and completion rates and time. Continual performance assessment and evaluation of graduate programs and students facilitate the identification of areas for improve-ments and associated challenges. Data also allow DGS to identify systemic challenges and/or bottlenecks. DGS then can either address the issue(s) at the institutional level or advise programs to remedy it on a program level, within the overall established business processes

for graduate studies at the institutional level. Offering recommendations at an early stage helps programs redirect their efforts to improve their performance, attract new students, and support continuing students.

The DGS assessment plan is concerned with programs' performance, the overall performance of graduate studies, and DGS processes. All assessment processes overlap at several stages, starting with recruitment and ending with graduation and alumni services. To successfully implement GEM and reach its ultimate goal, enrollment modeling and concepts are continually reviewed, and data needed for building projections are generated according to a timeline. Moreover, the model is implemented based on enrollment assumptions. The main assumptions are total enrollment—including newly accepted, readmitted, and continuing students—as well as students returning from absence and graduation figure. With a strong belief that institution-wide collaboration on GEM is essential to the success of any theory and/ or methodology, DGS works collaboratively with graduate program directors and offices to enhance GEM planning.

Assessment Phases and Data Collected

Phase 1: Enrollment Projections

Projections of students enrolled in a particular semester are based on trends. The first step is to select the groups for which enrollment will be projected:

- New students
- Returning/re-admitted students
- Continuing students
- Students expected to graduate
- Withdrawals, leaves of absence, no shows, and dismissals

The second step is to define the outputs the models will predict. Based on the populations identified in step one, DGS defines which feature of the population will be predicted for the fall and spring semesters:

- Headcount
- Full-time equivalent (FTE)
- Credit hours

Recommendations—offered after this assessment phase—enable academic programs to review their class offerings and size and to work on discipline-specific recruitment strategies and activities. The recommendations also assist DGS in setting recruitment targets, modifying admission cycles and targets, where necessary, and establishing discipline-specific and overall enrollment targets. They also provide graduate programs with insights regarding the necessity of developing interdisciplinary programs to increase overall enrollment.

Phase 2: Recruitment

"*As researchers have found, when groups of learners are diverse, they demonstrate better problem-solving skills, experience more student engagement and better student outcomes, and make more robust intellectual contributions*" (Hurtado 2001; Hong and Page 2004; Hurtado and DeAngelo 2012; Valentine and Collins 2015; Mathur, *et al.* 2019).

Student diversity enriches graduate students' experience and leverages their intercultural sensitivity levels. As Williams, Berger, and McClendon (2005) note, the perceived relationship between diversity and excellence varies from institution to institution. Accordingly, diversity is a critical component for achieving excellence. In this respect, recruiting students from different genders, socioeconomic groups, educational backgrounds, countries, and cultures is key. Based on the projection phase, the first/initial phase, recruitment targets, plan, strategies, and objectives are set according to the following data:

- Total number of students needed to be recruited;
- Percentage of Egyptian vs. international students;
- Egyptian students' demographics;
- Percentage composition of international students by nationality;
- Percentage gender distribution; and
- Institutions of higher education where prior degrees were earned.

Recruitment Activities

(*See* Table 1.)

Data collected:

- ▌ Number of prospective applicants who attended recruitment events; and
- ▌ Number of applicants from these events.

Following this stage, DGS offers guidance to help individual programs yield interested applicants. Monthly meetings are held with all graduate program directors (Graduate Advisory Council, or GAC) and graduate student representatives (Graduate Students Association, or GSA) and with all graduate program administrative assistants to discuss graduate studies issues and identify corrective action(s). DGS also conducts individual meetings with program representatives to advise on their areas of strength and weakness and recommend adjustments. DGS also creates unified processes for graduate programs to follow in all stages of students' journeys. In addition, DGS created a manual to regulate practices and specify procedures for different aspects of graduate studies at the university while taking into account the differences that distinguish disciplines and/or schools. The manual documents, clarifies, and groups all the rules, procedures, and answers with which graduate students and graduate advisors should be familiar. It also provides students and advisors with a single point of reference.

GAC collaborates with DGS to resolve issues and unify processes. The council also plays a role in GEM,

beginning with discussions about policies, procedures, and guidelines related to its various aspects. Ad hoc committees include council members in work on new initiatives and regulations. Recommendations are shared with the whole council for its approval prior to implementation.

Phase 3: Admissions

Admissions processes are set according to the university's needs and graduate enrollment targets. Admission cycles are reviewed regularly and modified to best meet international and local needs. Data that are assessed (*see* Figures 3 and 4, on page 25) include:

- ▌ Applied (headcount and applications);
- ▌ Accepted;
- ▌ Matriculated;
- ▌ Selectivity; and
- ▌ Yield.

Graduate programs play a central role during this phase of admission and funding decisions. Committees at each program level evaluate and interview applicants using a score sheet created by DGS and agreed-upon and consistent criteria. Afterwards, departments add their decisions in Banner so the DGS admissions team can issue admissions letters accordingly. Once letters of acceptance are received by students, the programs follow up, providing advising and assisting with course registration. Meanwhile, DGS follows up with fellows who declined the fellowship offer and identify runner-ups based on their waiting lists.

Finally, DGS surveys accepted applicants who neither paid the enrollment deposit nor registered as well as with students who declined the fellowships. Corrective actions are taken accordingly.

Phase 4: Student Journey

Graduate students need to be well aware of the path to their degree completion. The path officially begins when the student receives an offer of admission. Several means of assistance are offered to retain graduate students and support them toward successful completion. Orientation is important for introducing new students to the

TABLE 1 ➤ Recruitment Activities

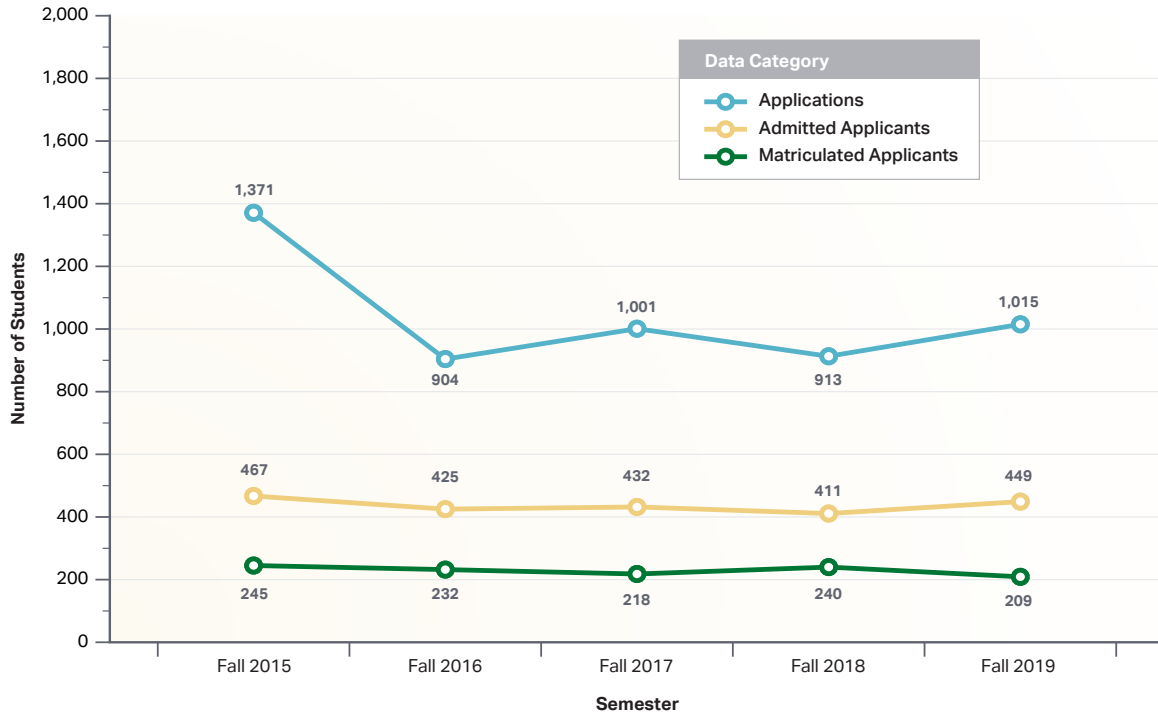| Egyptian	International
Open Houses	Graduate Fairs
Paid Digital Campaigns	Email Campaigns
Organic Digital Campaigns	Universities Information Sessions
Information Sessions	Co-Ordination With Refugees Focused Organizations
Targeted Promotional Materials	Targeted Promotional Materials

FIGURE 3 ➤ Application Data, Fall 2015–Fall 2019
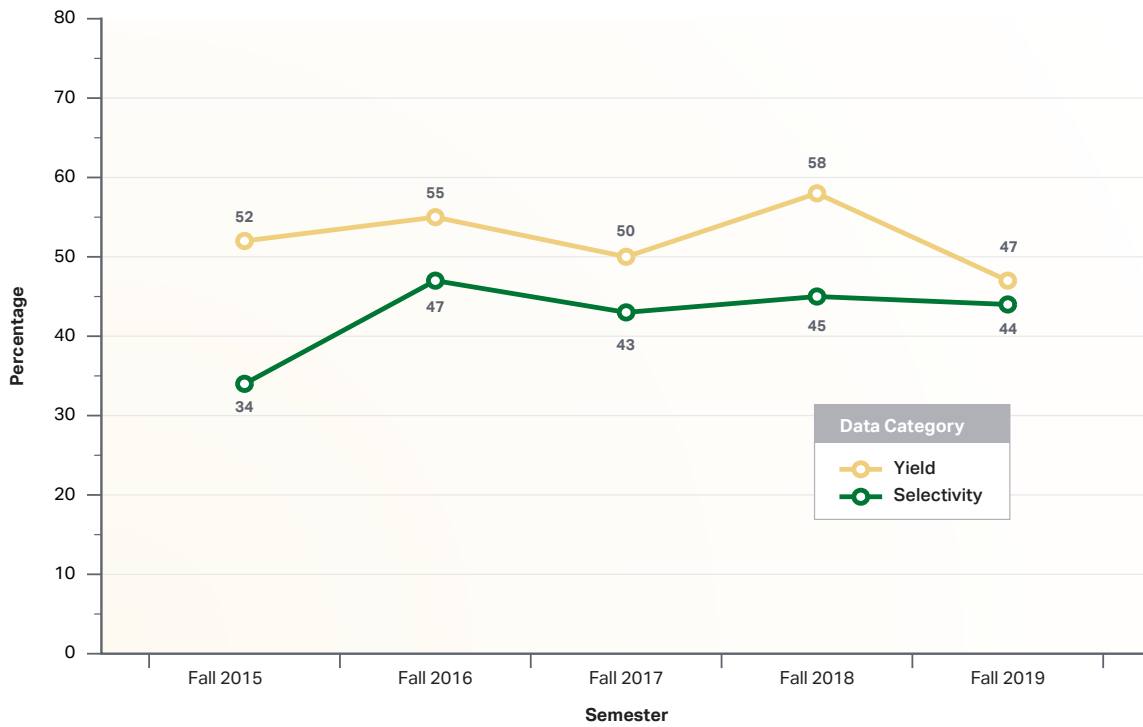
Source: AUC 2020

FIGURE 4 ➤ Yield vs. Selectivity, Fall 2015–Fall 2019

Source: AUC 2020

institution and providing them with a holistic view of what to expect and possible ways to proceed during their graduate studies journey at AUC. It is an opportunity to introduce students to graduate studies' policies, requirements, and regulations and to highlight their rights and duties as well as procedures relating to research, theses, and dissertations. The graduate studies manual provides more elaborate details on these subjects.

Student Services

Professional development enhances students' preparation for multiple career paths and diversifies transferable skills beyond academic curricula. Professional development opportunities that extend proficiency beyond traditional teaching and research training provide graduate students with expertise that will launch them into rewarding careers.

> [W]e learned that many things are needed to provide quality professional development to these graduate students. Universities need: a mechanism for listening to students and employers; partnerships across campus and with employers and alumni; and human and financial resources. But above all, what is needed is leadership across the university to advocate for broadening our preparation of graduate students to include skills, beyond core research skills, that will position them for success in a variety of career paths (Denecke 2017, 6).

Professional development programs that prepare graduate students for a broad range of careers beyond academic research vary in their availability and content (Denecke 2017). Professional development at AUC takes many forms: workshops, boot camps, work-study, internships, practicums, and seminars. These are offered by DGS in collaboration with graduate faculty, the university's Center for Learning and Teaching (CLT), and the university library.

Workshops at AUC may be centralized (for all graduate students from multiple disciplines) or school-based (focusing on specific skills) (Denecke 2017). Workshops designed to develop students' interpersonal and intellectual skills may be online (*e.g.*, academic integrity modules), one on one (*e.g.*, writing sessions), or face to

face (*e.g.*, research proposal writing, public speaking, and Institutional Research Board). Given the essential part of peers in students' journeys, graduate clubs and activities are wide-ranging and are well-attended to enhance graduate students' knowledge and ignite their enthusiasm. Several events are conducted on and off campus in Cairo, other governorates, and abroad. In addition, several competitions are conducted—including the three-minute thesis completion for doctoral students, which has recently been extended to master's students at AUC.

Offices supporting and collaborating with DGS throughout students' journey include:
- Schools and departments that represent the academic/professional disciplines in which graduate programs reside;
- Graduate Advisory Council;
- Graduate program directors;
- Graduate faculty;
- Strategic Management and Institutional Effectiveness Office; and
- Center for Learning and Teaching.

Several other forms of support are offered to ensure a positive graduate learning experience and increase retention and completion (*see* Table 2, on page 27). Support is provided to new students, to continuing students, and to those expected to graduate, throughout recruitment, retention, etc. Examples include providing academically qualified graduate students who have financial need with fellowship support; introducing incoming graduate students to academic aspects of Graduate Studies at AUC; and providing graduate students with grants to present at international conferences, study abroad, and/or travel to complete their research (*see* Phase 6, on page 28).

Data collected for assessing Phase 4 include:
- Workshops' attendance rates;
- Engagement in GSA and other clubs' activities; and
- Boot-camp attendance.

Graduate program directors serve as liaisons connecting programs and departmental staff, faculty, and

TABLE 2 ➤ Services and Support Offered

Student Journey Begins

▸ AUC Orientation
▸ Information Session
▸ University Official Welcome
▸ Campus Tour
▸ Graduate Students' Dinner
▸ Departmental Introductions

Support to Students for Completion

▸ Grants
▸ Awards
▸ Academic and Professional Growth
▸ Writing and English Support
▸ Boot Camps
▸ Mental Health and Wellness
▸ Diversity and Inclusion
▸ Graduate Students' Association
▸ Graduate Students' Lounge

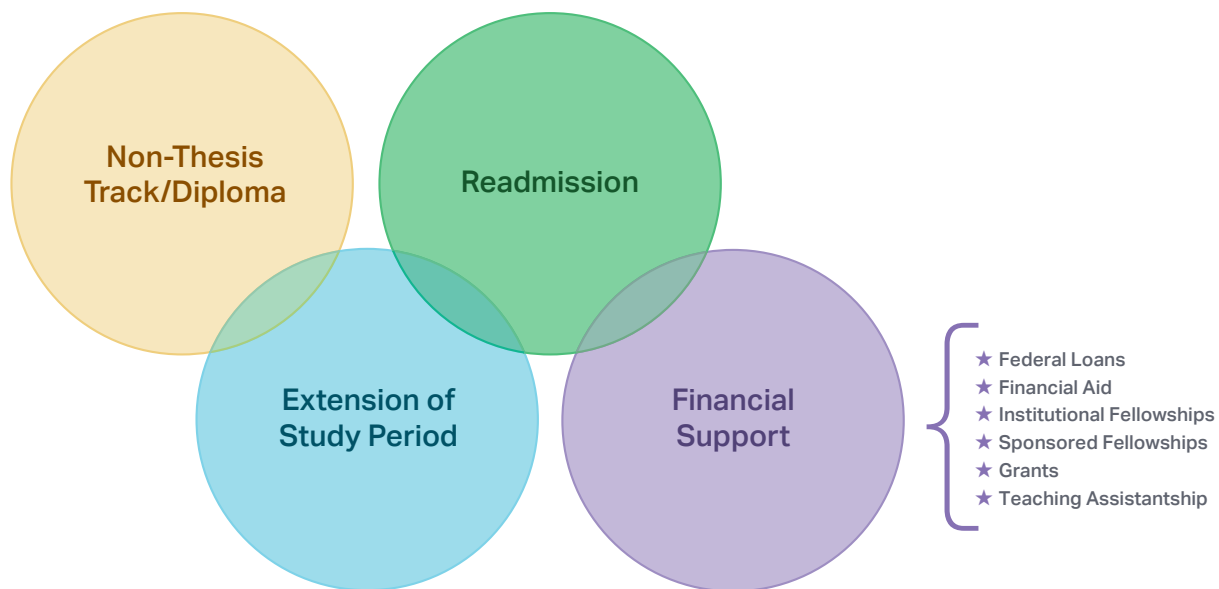**Graduation**

▸ Commencement
▸ Alumni Services

students to DGS; they consistently implement policies that govern graduate studies. Following this assessment

phase, graduate program directors encourage students to attend workshops, market services to all graduate students, and encourage students to know their rights and duties and be well aware of the regulations in the graduate studies manual. On the other hand, DGS modifies workshop offerings, topics, and timing; announces and markets for workshops; and examines the possibility of awarding workshop participants with earned points on their transcripts.

Phase 5: Retention

The processes of recruitment and admission should always be accompanied by a commitment to promoting student retention and degree completion. Recruiting, enrolling, and retaining students are the foundations of graduate education. While some attrition may be unavoidable, progress is evaluated to enhance student retention. DGS offer several means of support to retain students (*see* Figure 5). Among the data analyzed to evaluate retention-related actions are:

🔖 Retention rates;
🔖 Withdrawals;
🔖 No-show rates;

Non-Thesis Track/Diploma

Readmission

Extension of Study Period

Financial Support

★ Federal Loans
★ Financial Aid
★ Institutional Fellowships
★ Sponsored Fellowships
★ Grants
★ Teaching Assistantship

FIGURE 5 ➤ DGS Services for Retention

- Enrollment distribution;
- Credit-hour distribution;
- FTE;
- Class size;
- Thesis registration;
- Thesis supervision;
- Degree-completion time;
- Completion rates;
- Extensions of study periods;
- Re-admissions; and
- Changing tracks within a graduate program (*e.g.*, from a thesis to a non-thesis track).

This assessment phase directly affects students' success and program quality. DGS conducts periodic surveys to monitor students' satisfaction.

Phase 6: Financial Support and Funding Opportunities

AUC offers different funding opportunities for graduate students. DGS identifies and manages funding for graduate education and research. Funds are offered either as fellowships/assistantships or support grants. Various fellowships and assistantships are available: need and merit based, offering full or partial coverage. Support grants—available competitively to all graduate students—provide support for international conference attendance, thesis research, and study abroad experiences. Federal loans are also offered to U.S. students attending AUC, and financial aid is offered to students of all nationalities, though not through DGS. These funding opportunities increase accessibility nationally and internationally by students from a broad range of socioeconomic backgrounds.

Data collected and assessed for Phase 6 include:

- Percentage of students benefiting from financial assistance and other funding opportunities; and
- Percentage of support grant awards.

DGS allocates fellowships to individual programs to award to students according to a mathematical model based on a number of variables, including:

- Successful admission applications to this program (indicating demand);
- Actual program size (number of students enrolled);
- Average completion times (indicating progress toward completion); and
- Named fellowships specific to a program.

This model uses data from four academic years (eight semesters) and thereby relies on trends rather than individual snapshots of performance. It seeks to incentivize programs to enhance recruitment and efforts to attract new external funding sources while supporting student completion. Because the model is evaluated every year, fellowship allocations change from year to year.

After assessing this phase, graduate program directors and administrators review fellowship distribution to ensure balance between student recruitment and completion.

Teaching Assistantship

DGS strives to foster an environment in which graduate student teaching is valued and rewarded and to ensure that future faculty members leave the institution well-prepared for their roles, especially by providing competent teaching assistantships to support the overall academic environment at AUC. Teaching assistants (TAs) are required to participate in mandatory training before commencing their work. In addition, DGS has created a manual to guide the work and conduct of TAs and faculty members. (The manual outlines TAs' rights and regulations.)

Data collected:

- Number of new teaching assistants undergoing training every semester.

Graduate students also have the opportunity to conduct research with faculty members in different disciplines. (Research assistants are not under the purview of the Office of the Dean of Graduate Studies.)

Analysis and Summary

Graduate offices and schools provide input on the selection of data for institution-wide and program-specific analysis for benchmarking, regardless of the model followed. This affects the implementation of any GEM plan—including engaging faculty, staff, and senior administration in executing the plan to reach the enrollment target and guarantee a successful journey for students. Reviewing and assessing graduate programs' performance enables DGS to offer recommendations for changes (including corrective actions, when necessary). Enrollment data compiled at the institutional level are used to project figures and plan; those plans are subject to accreditation at the regional level. Program data are at the core of programs' needs assessment and accreditation. Recruitment decisions are based on the application, with yield and enrollment rates covering a timespan. Moreover, student success rates and program evaluation are contingent upon the degree completion rates and potential/actual career paths of the members of each graduating class. DGS automates datasets for ongoing review of strategic plans, goals, objectives, strategies, key performance indicators (KPIs), and targets, overall processes, and performance—and for regularly scheduled distribution to key stakeholders. Data-driven enrollment management allows DGS to clearly communicate the goals of data collection to faculty, emphasizing that the end goal is improving programs' performance and enrollment and retention rates. Moreover, it helps DGS communicate the data to groups, as appropriate, including faculty, current students, and prospective students.

Recommendations

Graduate education schools and offices could adapt this framework according to their needs and strategic requirements. The following recommendations are also helpful in developing the framework:

- Appropriate administration structures to improve programs' performance and efficiency.
- Availability of good practice guidelines and rubrics for individual programs improves ef-

fectiveness in operations and helps in the administration of graduate programs.

- Although students' professional development and training is essential, supporting faculty and staff is vital as well to ensure a smooth relationship. Faculty members, graduate program directors, and administrative assistants have to be qualified and aware of all graduate students' needs and challenges and the best means of addressing them. This could be attained by offering workshops, training sessions, and hands-on activities to simulate students' journey and meet their needs throughout their study period—proficiently and efficiently.
- GEM needs to be developed and implemented collaboratively. Though a specific entity within an education institution needs to take the lead on GEM, success is ensured through common ownership and a fully participatory approach.
- Develop a comprehensive data-driven process to assess progress toward the university's (specifically graduate studies') enrollment management plan.

Prospects for Future Research

GEM practices should be investigated and researched further with regard to GEM's pillars—recruitment, performance assessment, students' journey, and retention and student services. At institutions offering graduate degrees, GEM culture should be carefully interwoven with short- and long-term strategies and implementation techniques. Education leaders should pay close attention to planning and to presenting a roadmap for graduate enrollment that is distinct from that for undergraduates. This will assist in initiating and sustaining a GEM culture at education institutions worldwide.

It is worth noting that DGS has been working on new and innovative practices to enhance the GEM culture at AUC. The assessment team is currently evaluating the effectiveness of these practices and will publish the outcomes in future research articles.

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