



COLLEGE OF SOCIAL SCIENCES
CENTER FOR SUSTAINABLE DEVELOPMENT
(CSD)

CURRICULUM FOR PHD PROGRAM
IN
SUSTAINABLE DEVELOPMENT
(SDEV)

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1. Background

Ethiopia is one of the developing countries in the world and ranks 175th in the latest Human Development Index (UNDP, 2022)¹. The multidimensional poverty index puts Ethiopia as having 72.7% of its population in severe multidimensional poverty against an average of 10.5% for all developing countries. Ethiopia is surpassed only by nine countries in multidimensional poverty namely Niger (74.8%), South Sudan (84.9%), Burundi (82.5%), Chad (79.3%), Republic of Congo (78.3%), Madagascar (82.9%), Malawi (78.3%), Somalia (83.8%) and Burkina Faso (64.8%) (World Bank, 2022)².

Exacerbating this dire situation are the recurring man-made and natural hazards that have plagued the country for decades. Particularly hydro-meteorological induced disasters are increasing in frequency and intensity due to worsening climate change. To close the food insecurity gap, the country perpetually relies on humanitarian emergency aid to fend off starvation of millions of its citizens. Re-direction of domestic resources towards responding to recurrent disasters also means that development efforts of the country are under-resourced.

Ethiopia recognizes the need to chart a course for sustainable development to alleviate multi-dimensional poverty and improve quality of life for its citizens by leveraging its abundant natural and human resources. Towards this end, in 2010 the government of Ethiopia formulated the first five-year development plan as a stepping stone to attain middle-income status by 2025. The plan envisioned for the country to become an industrial hub for East Africa. The government successively formulated and implemented a succession of development plans that registered remarkable economic growth.

In 2020, the country introduced a Ten-Year Development Plan (2021-2030) (TYDP) with ten strategic pillars which are centered on home-grown economic reform. The TYDP strives to create an inclusive and sustainable development in all dimensions – economic, social, environmental, governance, and institutional. Towards this end, Ethiopia has aligned its TYDP to the 2030 Agenda³ as well as the Africa Agenda 2063⁴ in a multi-sectoral and multi-stakeholder consultation process (Ethiopia VNR, 2022)⁵. It is committed to the SDGs because, much more than in past development plans, its national vision and the TYDP are interlinked with the 17 SDGs and the associated 169 targets (VNR, 2022). The SDGs are also integrated into the country's budget system as reflected by a lion's share of budget allocation to pro-poor sectors aimed at advancing the global goals (VNR, 2022).

Sustainable development (SD) as a development paradigm is defined by the Brundtland Commission report as “*development that meets the needs of the current generation without*

¹ UNDP (2022). The 2021/2022 Human Development Report. https://hdr.undp.org/system/files/documents/global-report-document/hdr2021-22pdf_1.pdf

² World Bank (2022). Multidimensional Poverty Measure: Global Monitoring Database. World Bank, Washington, DC. <https://www.worldbank.org/en/topic/poverty/brief/multidimensional-poverty-measure>

³ United Nations (2015). Transforming our world: The 2030 Agenda for Sustainable Development.

⁴ African Union Commission (2015). *Agenda 2063: The Africa We Want*. Addis Ababa, Ethiopia

⁵ VNR (2022). Ethiopia: Voluntary National Review 2022. Ministry of Planning and Development. Addis Ababa.

compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987)⁶. In this definition, SD provides a mechanism through which a society can interact with the environment while not risking damaging the resources available for future generations (Mensah, 2019)⁷. Mohieldin (2017)⁸ claims that SD is an approach to development which uses resources in a way that allows the resources to continue to exist for future generations. In 1992, the United Nations Conference on Environment and Development (UNCED), known as the Rio Earth Summit, stated that SD should become a priority item on the agenda of the international community and recommended that national strategies be designed and developed to address economic, social and environmental aspects of sustainable development (Allen, Metternicht, & Wiedmann, 2018)⁹.

The three main pillars of SD are economic growth, environmental protection, and social equality (Taylor, 2016)¹⁰. Based on this, it can be argued that the concept of SD rests, fundamentally, on three conceptual pillars: “economic sustainability”, “social sustainability”, and “environmental sustainability” (Mensah, 2019)¹¹. Economic sustainability implies a system of production that satisfies present consumption needs without compromising future needs (Lobo, Pietriga & Appert, 2015)¹². Social sustainability encompasses the notions of equity, empowerment, accessibility, participation, cultural identity, and institutional stability (Daly, 1992)¹³ because development is about people (Benaim *et al.*, 2008)¹⁴. The concept of environmental sustainability is about the natural environment and how it remains productive and resilient to support human life. Environmental sustainability relates to ecosystem integrity and carrying capacity of natural environment (Brodhag and Taliere, 2006)¹⁵. SD has over the years become relevant for both developed and developing countries and the relevance deepens as population keeps increasing while the world’s natural resources are increasingly depleted. Although Ethiopia has a positive economic development trajectory, the fast rate of population growth and rapid deterioration of the environment and natural resources poses major challenges for the future of sustainable development.

⁶ Brundtland, G. H. (1985). World commission on environment and development. *Environmental policy and law*, 14(1), 26-30.

⁷ Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Social Sciences*, Vol5 (1). <https://doi.org/10.1080/23311886.2019.1653531>

⁸ Mohieldin, M. (2017). The sustainable development goals and private sector opportunities. *World bank group*.

⁹ Allen, C., Metternicht, G., & Wiedmann, T. (2018). Initial progress in implementing the Sustainable Development Goals (SDGs): a review of evidence from countries. *Sustainability science*, 13, 1453-1467.

¹⁰ Taylor, S. J. (2016). A review of sustainable development principles: Centre for environmental studies. South Africa: University of Pretoria

¹¹ Ibid

¹² Lobo, M. J., Pietriga, E., & Appert, C. (2015, April). An evaluation of interactive map comparison techniques. In *Proceedings of the 33rd annual ACM conference on human factors in computing systems* (pp. 3573-3582).

¹³ Daly, H. E. (1992). Allocation, distribution, and scale: towards an economics that is efficient, just, and sustainable. *Ecological economics*, 6(3), 185-193.

¹⁴ Benaim, A., Collins, A., & Raftis, L. (2008). Social dimension of sustainable development: guidance and application.

¹⁵ Brodhag, C., & Taliere, S. (2006, May). Sustainable development strategies: Tools for policy coherence. In *Natural Resources Forum* (Vol. 30, No. 2, pp. 136-145). Oxford, UK: Blackwell Publishing Ltd.

One of the major choke-points that will likely hamper the smooth and unimpeded path towards sustainable development in Ethiopia is the dearth of high-level human capacity that can plan, guide and implement it. Sustainable development requires adequate expertise that is essential to pursue effective and innovative approaches to planning, as well as the ability to prioritize issues over time, sectors, regions and stakeholder groups. The capacity to tailor, formulate and integrate strategies and policies to achieve sustainable development is critical.

2. Needs Assessment

A need assessment survey for a PhD program in ‘Sustainable Development’ was conducted by the Center for Sustainable Development of the College of Social Sciences. The needs assessment was carried out with financial support of the SustGOV project. The survey for the needs assessment used three separate questionnaires prepared specifically for i) university officers, ii) federal and regional level sector offices and iii) potential PhD candidates. The survey questions related to the importance of sustainable development and capacity gaps in the country, the need for a PhD program and its different dimensions including the possible contents of the program.

Five regions (namely, SNNP, Sidama, Amhara, Oromia and Somali), two federal cities (Dire Dawa and Addis Ababa) and federal level ministries were covered in survey. In these regions, data was gathered from relevant sector offices (see Appendix 2 for details) working on sustainable development, public universities with programs related with sustainable development, and individual potential candidates for the PhD program. The public universities covered include Bahir Dar University (Amhara); Dilla University (SNNP); Dire Dawa University (Dire Dawa); Hawassa University (Sidama), Jijjiga University (Somalia), Jimma University (Oromia), Addis Ababa University and Kotebe Metropolitan University (Addis Ababa).

In total, 494 questionnaires were distributed among various stakeholders: sector offices (174), programs in public universities (52) and potential individual candidates from different sectors and universities (268). In addition, the collected data was enriched with key informant interviews and discussions held with SDG focal persons in sector office at the Regional and Federal levels as well as with academics regarding the need and relevance of the envisaged PhD program in sustainable development. Participants were asked several questions related to the importance of sustainable development and capacity gaps in the country, the need for a PhD program and its different dimensions including the possible content of the program.

Results of the needs assessment are summarized and presented in Appendix 1. Of the total respondents, 92% agree or strongly agree that sustainability is a critical development issue for Ethiopia. Among those who agreed or strongly agreed that sustainable development was a crucial factor in Ethiopia’s development trajectory, 95% indicated their agreement or strong agreement that there is a capacity gap in high-level expertise in sustainable development in the country.

Respondents were also asked whether there is a need for a PhD program in Sustainable Development in Ethiopia. The overwhelming majority (92%) responded in the affirmative ascertaining that PhD training is needed to address the high-level human capacity gap. (See table 4). Affirmative responses from among respondents from sector offices and university officers were very similar, at 91.4% and 92.3%, respectively.

Training at PhD level was also considered extremely useful to their institutions by 73% of respondents. Another 27% also mentioned that such training was somewhat useful for their institutions. These two responses together form nearly 99% with only 1% stating that it is not useful. This is a good indication that the training to be carried out will be purposeful in achieving institutional objectives and missions.

Furthermore, respondents identified a number of areas of expertise for potential engagement of PhD graduates. Respondents from the universities identified research, training and consultancy as the most important areas of engagement while advising policy development and decision making in sustainable development were considered to be the most important areas of engagement by respondents from sector offices.

Both sector offices and universities were asked regarding the availability of potential candidates who might be interested in the program. About 84% of total responded that there are potential candidates in universities and sector offices who might be enrolled in the program. Those who responded in the affirmative are higher in the universities (89%) compared to sector offices (83%). This is quite understandable since universities whose main engagements are teaching and research require more PhD level trained personnel than sector offices. But, both the need for the program and the availability of potential candidates were also substantial in the sector offices.

A very important part of any PhD program is the nature of the courses students are enrolled in and the type of research they undertake. The courses will enable students to be conversant with the literature and help them to identify gaps in the literature thereby identifying research topics that address specific problems related to sustainable development.

Respondents were asked to rate a set of 14 possible course topics as less important, moderately important, or very important. Almost all the course topics were identified as being very important by an overwhelming majority (Figure 2). However, there were some differences among the respondents in rating some courses as very important. For example, development theory, green economy, project and program management were rated as very important by a higher proportion of respondents from the sector offices. All other courses, however, were rated as very important by a higher number of respondents from the university community. These courses are sustainable development issues, urban sustainability, Governance for sustainable development, sustainable finance, research methods, statistics, philosophy of sciences, environmental ethics and environment and climate change.

Results of the needs assessment which targets potential candidates in the PhD program are presented in Appendix 1, Table B). Of the total of the interviewed potential candidates, 74.4% and 19.5% are highly interested and moderately interested, respectively, in applying for the PhD program in Sustainable Development. And about 72% of those individuals who expressed interest in the PhD program indicated that they would enroll as full time students. With regard to commitment in successfully completing the PhD program, 78% of the potential candidates who expressed interest said they are fully committed.

The foregoing reveals that sustainable development is a major development issue in Ethiopia. It also shows that there is a capacity gap to implement sustainable development, and long-term training program such as a PhD program is highly needed. It was also identified that PhD graduates will be useful to fulfill intuitional missions and goals and will acquire expertise in the areas of research, teaching, consultancy, policy advising, and program management. In short, the needs assessment reveals a very strong need for a PhD program on sustainable development.

3. Rationale

The development of this curriculum takes into account the national context and circumstances as well as the capacity and capability of the Addis Ababa University (AAU). It articulates the thinking and reasoning of the necessity for establishing a PhD program in sustainable development.

The needs assessment survey clearly presents an overwhelming need for high-level professionals in sustainable development. Stakeholders identify sustainable development as a crucial need for the development aspirations of the country. Similarly, a plurality also note that there is a gap of highly trained professionals in sustainable development and that there are persons who are both eligible to and interested in joining the PhD program.

The PhD program focuses on both the science and practice of sustainable development. The program is designed considering the felt-need of Ethiopia for highly qualified human power in sustainable development in support of government and public entities, as well as academia. AAU has the foundational potential capacity to undertake such a program. Furthermore, a major opportunity to bolster AAU's capacity and to sustain the PhD program is the intended partnership and collaboration with highly reputed international institutions with the depth of experience in other African countries which will add great value to research and education through knowledge and skills transfer.

4. Objectives of the PhD Program

4.1. General Objective

The program aims to produce high-caliber researchers and scholars with professional competencies in the field of sustainability, with special focus on sustainable development.

4.2. Specific Objectives

The specific objectives of the PhD program are to:

- i) produce researchers who are capable of undertaking research that addresses the development needs and challenges of the country;
- ii) generate capable educators who contribute their expertise and experience in producing the next generation of professionals in sustainable development;
- iii) undertake roles within government and the public sector as technocrats, policy makers and advisers; and
- iv) assume responsibilities outside of government as development consultants, practitioners, advisers and leaders.

5. Graduate Profile

Upon successful completion of the PhD Program in Sustainable Development, graduates will be able to:

- a) effectively deliver courses in the institutions of higher learning;
- b) design, conduct and lead research in sustainable development that contributes to resolve challenges and augment opportunities;
- c) lead the formulation, implementation and integration of policies and associated tools leading to sustainable development;
- d) provide expert advice to policy- and decision-makers on policies development and implementation;
- e) examine and elucidate the complex linkages of the different dimension of sustainable development in a policy and governance perspective; and
- f) effectively discharge leadership responsibilities related to sustainable development.

6. Governance and Administration of the PhD Program

Administration of the PhD program in Sustainable Development involves the leadership and participation of Center entities and faculty. These include:

- Director of the Center for Sustainable Development.
- The Center Graduate Committee (CGC) which includes elected faculty members from among core and affiliated academic staff of the Center.
- Coordinator of the PhD program at the Center who is responsible for coordinating routine activities of the PhD program as per the guidelines and procedures issued by the Center.
- Supervisors and instructors participating in the PhD program.

7. Admission Requirements

Admission to the PhD Program is based on a successive evaluation of applicants' preparedness for the program.

7.1. Minimum Requirements

An applicant to the PhD program must fulfill the minimum PhD admission requirements of the university. An applicant is required to submit authentic and complete credentials and documentation in the support of the application.

7.2. General requirements

The Center will establish an *ad-hoc* PhD candidate screening and selection committee to evaluate applications objectively and appropriately. To be considered for admission, the applicant to the PhD program in Sustainable Development must:

- fulfill the minimum admission requirements of the University, specifically candidates must score pass marks in the GAT (Graduate Admission Test) of the University;
- have completed a research-based M.A. or MSc degree in the social and natural sciences from an accredited university in one of the following disciplines: Social Sciences, Development Studies and Environmental Sciences or related disciplines, such as Economics, Agriculture, Natural Resources Management, Public Administration, and Public Health;
- submit a one-page “statement of intent/purpose” regarding her/his PhD study; and
- demonstrate research experience as may be shown by previous research works and publications.
-

7.3. Qualifying Criteria

Selection of the most suitable candidate from among those applicants that fulfill the general requirements will be determined based on the following qualifying criteria.

- prepare and present a concept note for her/his PhD research to the Center;
- sit for and demonstrate excellence on a written exam administered by the Center; and
- face-to-face interview conducted by the Center

8. Study Duration

The PhD program consists of one and half years of course work and two and half years of research work. Hence, the PhD student is required to complete the program in a total of four years.

Duration of study may be extended to a maximum of six years provided a candidate presents evidence that he/she was unable to complete the study within the specified period due to extraordinary reasons. An extension request must be submitted at least ninety days prior to the conclusion of the permitted four year duration. For an extension of study to be granted, it must be supported by the PhD student/candidate’s supervisor, reviewed and endorsed by the CGC and finally approved by the university’s academic vice-president as per the guidelines of the university.

9. Candidate Assessment and Evaluation

The Center Graduate Committee (CGC) is responsible for monitoring the performance of a PhD student/candidate through regular assessment meetings. Progress towards completion of the PhD program occurs through a set of sequential milestones. These milestones include:

- successful completion of course work;
- successful completion of written and oral qualifying PhD candidacy examination;
- successful written dissertation research proposal development and its oral defense;
- successful progress in PhD research;
- successful draft dissertation defense (mock defense);
- successful written doctoral dissertation and public oral defense of the same in the presence of internal and external examiners; and
- publication of at least two scientific papers (published or accepted for publication in reputable journals) and at least two additional manuscripts submitted for publication.

9.1. Course Completion

Assessment of student performance is carried out using specific criteria set for each course which may include written examination, oral examination, term papers, projects, review of papers and other assessment tools as appropriate.

9.2. Candidacy Examination

Towards the unimpeded, timely and effective running of the assessment and evaluation of the PhD student's written and oral qualifying candidacy examination, the Center Graduate Committee is responsible for the following:

- assignment of two persons from among the core and affiliate faculty of the Center that will form the candidacy assessment panel;
- issue clear guidelines and procedures on how the candidacy examination is to be administered; and
- schedule the date, time and place of when a candidacy examination is to be held and announce the same to both the PhD student and examining panel.

9.3. Proposal Development and Defense

The CGC is responsible for scheduling and ensuring that a PhD candidate submits a research proposal and defends the same via a seminar in a public setting. The CGC will:

- in consultation with research supervisor(s), appoint a two-member panel of readers (one from the Center and the other external to the Center);
- schedule the date, time and place of the proposal defense seminar and publicly announce the same; and
- determine the length and procedure of the research proposal defense seminar.

The proposal defense seminar must be held no later than the end of the third semester after enrollment in the PhD program.

9.4. Research Mid-way Progress

The research supervisor will organize a public seminar where two Center faculty members will serve to evaluate the research progress of the PhD candidate. The PhD candidate is expected to:

- present the completed data collection and analysis output
- present preliminary findings of the research
- produce at least two publishable manuscripts

The research progress seminar must be held no later than the end of the sixth semester (*i.e.* third academic year). The research supervisor must submit to the CGC a report on the research progress of the PhD candidate as per a reporting format set by CGC.

9.5. Draft Dissertation Defense (mock defense)

The research supervisor will organize a public seminar of the draft dissertation defense where two Center faculty members will serve to evaluate the dissertation of the PhD research. The PhD candidate is expected to:

- prepare the final draft of dissertation and submit the same
- make a public presentation indicating major findings and articles that are submitted, accepted and published
- defend the dissertation, accept feedback and suggestions for incorporation to meet the required quality and standard

The draft dissertation defense must be held no later than the end of the eighth semester (*i.e.* fourth academic year). The research supervisor must submit to the CGC a report on the mock defense of the PhD candidate as per a reporting format set by the CGC.

10. Graduation Requirement

To successfully complete the program and earn a doctorate degree in Sustainable Development, a prospective graduate must attain the minimum requirements set forth here below for course work and research work.

10.1. Course Work

All course work prescribed in this curriculum must be successfully completed. The candidate must attain a minimum of:

- B- in every course; with no unusual grades such as NG and I; and
- a cumulative grade point average (CGPA) of 3.00.

10.2. Research Work

The PhD candidate must publish at least two articles in internationally recognized peer-reviewed journals (or accepted for publication) and submit additional two submissions that are under review for publication to be eligible for graduation. The prospective graduate must also produce, in English, either a monograph or an article-based dissertation which s/he must defend in an open public forum in the presence of a doctoral examining committee. Organization of

the thesis either as a monograph or a collection of articles shall be according to the University's guideline for thesis writing. The Center shall constitute the doctoral examining committee as per the AAU Legislation Articles 121 and 122.

The doctoral examining committee shall rate the PhD research work based on a set of evaluation items set by the Center. The examining committee shall unanimously rate the dissertation as per the grading system shown in Article 121 of the university Senate Legislation 2019 (and revised thereof). The PhD candidate must receive at least a B (requiring a substantial revision) to be considered for graduation.

11. Degree Nomenclature

The PhD Degree awarded upon successful completion of the program shall be designated as:

- In English: *Degree of Doctor of Philosophy in Sustainable Development*
- In Amharic/በአማርኛ: የፍልስፍና ዶክትሬት ዲግሪ በዘላቂ ልማት

12. Program Evaluation and Quality Assurance

The Center for Sustainable Development is responsible for maintaining the highest standard possible to enhance and assure the quality of the PhD program. The Center will meet and/or exceed the university's quality standards of the program by:

- continually monitoring and ensuring that the PhD program is in compliance with the University standards as indicated in this curriculum;
- hold annual consultative discussions with the Center's core and affiliate academic staff, and PhD students to evaluate the operation of the PhD program; and
- conduct consultative workshop with stakeholders and partners every four years to review and assess the relevance of the PhD program and make revision of the curriculum as appropriate.

Evaluation of the PhD program is intended to make improvements and further enhance its quality and relevance. Further, *apropos* of ensuring quality of the PhD program, the Center Graduate Committee is responsible for:

- assignment of a graduate supervisor suitable to the PhD candidates' research project;
- monitoring progress of the PhD through annual performance review *vis-a-vis* a study plan; and
- assignment of internal and external dissertation defense examiners.

13. Staff and Resources Profile

The Center for Sustainable Development is established and housed within the College of Social Sciences to foster multidisciplinary research and education. Currently, the center has six core academic staff and ten affiliated academic staff with diverse disciplinary backgrounds that are relevant to sustainable development the details of which are shown in Appendix 3.

The Center is implementing a six-years collaborative project (NORHED-II) with funding from NORAD (the Norwegian Agency for Development Cooperation). Addis Ababa University entered into agreement with the University of Oslo to implement to establish and support the establishment of the Center. The MoU signed between AAU and the University of Oslo is shown in Appendix 4. The NORAD funding is primarily intended to support a PhD level education, interdisciplinary research, and short-term capacity building to policy makers and practitioners. Funding is available to support the envisaged PhD program which includes stipend for PhD candidates, funding for PhD dissertation research, investments in office spaces and digital technologies to support PhD teaching and student research, and remuneration for faculty members, dissertation examiners participating in the PhD program and other incidental expenses directly related to the operation of the PhD program.

The Center runs a state-of-the art seminar/conference room well equipped with digital technologies suitable for both face-to-face and online teaching as well as video conferencing. In addition, the Center avails a computer cluster room equipped with modern networked work stations for PhD students. Among university's communal use facilities, the Center has access to back-end infrastructure to support high performance computing, data storage, learning management system, *etc.*

14. Course Catalogue and Modality

14.1. Course Coding

Courses will carry a prefix of four letters followed by three numbers. The four letters shall be 'SDEV', an abbreviation representing 'sustainable development'. The rules for the three digit code shall be as follows:

- the first digit will be used to indicate graduate level course '7' or research '8'
- the second digit denotes the progressive difficulty level of the course
- the third digit indicate whether the course is offered in the first or second semester of the academic year: with odd numbers reserved for first semester (except '9') and even numbers reserved for second semester. When the last digit is a 9, the course may be carried over more than one semester.

14.2. Course Composition and Organization

The program is composed of eight courses totaling 26 credit hours to be delivered over three semesters of 15 – 16 weeks (or, one and a half academic year) and PhD research work which extends over three academic years (or, six semesters). At no time during her/his study may a PhD student/candidate enroll for more than 15 credit hours per semester.

One professor or associate professor (course leader) will have overall responsibility for each course. The course leader may be supplemented by other senior academic staff of the Center and/or prominent guest lecturers whose area of expertise will augment the course. In close collaboration with the Center, the course leader will be in charge of planning the course syllabus, identifying and assigning guest professors and designing the course assessment modality, compiling and submitting student grades.

The course leader is also responsible for maintaining and improving the quality of the course and its content. Hence, s/he will be the primary person leading the evaluation of the course when the PhD program is under evaluation.

14.3. Course Delivery

The program will employ student-centered, team-teaching and interactive course delivery options, and the method of course delivery will include face-to-face, blended and virtual modalities. For instructional courses, a credit hour is valued at 50 minutes of lecture time or two to three hours of weekly supervised tutorial or practical work.

The medium of instruction for all courses is English. Courses will be apportioned over a semester of 15 – 16 weeks. The course catalogue presented in Table 1 shows the list of courses along with course code, course title, and, credit hours and its equivalent in ECTS.

Table 1: Course Catalogue

Course Code	Course Title	Cr. Hrs.	ECTS
Year I Semester I			
SDEV711	<i>Philosophy of Science</i>	2	5
SDEV713	<i>Seminar on Sustainable Development: Global Goals and Local Realities</i>	2	5
SDEV725	<i>Policy and Governance for Sustainable Development</i>	3	7
SDEV727	<i>Sustainable Environmental Management</i>	3	7
Total		10	24
Year I Semester II			
SDEV712	<i>Advanced Research Methods</i>	3	7
SDEV724	<i>Human Development and Sustainability</i>	3	7
SDEV726	<i>Urban Sustainability</i>	3	7
SDEV728	<i>Sustainable Development Planning and Management</i>	2	5
Total		11	26
Year II Semester I			
SDEV811	<i>Seminar on Food, Water and Energy Systems</i>	3	7
SDEV813	<i>Scientific writing and communication</i>	2	5
SDEV899a	<i>PhD Dissertation I – Literature Review, and Proposal Development & Defense</i>	2	5
Total		7	17
Year II Semester II			
SDEV899b	<i>PhD Dissertation II – Field Work</i>	2	5
Year III Semester I			

SDEV899c	<i>PhD Dissertation III – Field Work Report and Preliminary Data Analysis</i>	2	5
Year III Semester II			
SDEV899d	<i>PhD Dissertation IV – Data Analysis and Preliminary Findings</i>	2	5
Year IV Semester I			
SDEV899e	<i>PhD Dissertation V – Research Report Writing</i>	2	5
Year IV Semester II			
SDEV899f	<i>PhD Dissertation VI – Dissertation Preparation and Defense</i>	2	5
Grand Total		38	92

15. Research and Dissertation

PhD candidates are expected to work independently on their research project with close supervision by their designated research supervisor(s). The research supervisor(s) is/are expected to keep track of the candidate's progress from proposal development to dissertation defense. Should the progress of the research work or dissertation writing face obstacles that hinder a timely completion, the research supervisor(s) must promptly report to the Center's PhD coordinator with recommendation on possible remedial measures.

15.1. Research Supervision

Each PhD candidate will have a supervisory team composed of one main supervisor and at least one other co-supervisor assigned to her/him by the CGC to oversee the research work and writing of the dissertation. The main doctoral research supervisor must have a PhD degree and attained the academic rank of associate professor or above. If this criteria cannot be met, the potential main research supervisor must demonstrate to the CGC that s/he has recent research experience and a record of publications that meet the necessary standards.

Towards lending assistance and advice to the PhD candidate in successfully completing her/his research, the supervisor shall:

- provide guidance to the PhD candidate to adopt an independent approach to learning;
- ensure that the research plan is realistic and attainable, and review the research progress against the research plan;
- hold regular formal supervision meetings, at least once a month, where the candidate is guaranteed uninterrupted supervision and guidance;
- ensure the candidate's participation in and contribution to academic seminars organized by the Center;
- review the PhD candidate's manuscripts for publication in peer-reviewed journals or other reputed publication outlets; and
- provide overall academic advice and professional support to the candidate.

Supervisors have a duty to keep tabs on the academic and research progress of the PhD candidate they are responsible for. Additionally, they must, annually, produce an overall assessment report highlighting the strengths and weaknesses of the PhD candidate; which, in turn, can serve to prescribe corrective measures. However, if at any time an issue arises that considerably compromises the progress of the research, the main research supervisor should bring it to the attention of the PhD coordinator.

In addition to the annual overall research progress evaluation, the main research supervisor has an important role to play in the formal progress assessment/evaluation of the research work (see Section 9: Candidate Assessment and Evaluation); namely:

- in consultation with the PhD coordinator appoint a two-member panel of readers, to evaluate the research proposal defense;
- organize and oversee the research mid-way progress seminar and submit a formal report to the CGC on the same; and
- organize and oversee the draft dissertation defense (mock defense).

It is the responsibility of the main supervisor to ensure that the PhD candidate has published at least two articles in peer-reviewed journals before being eligible for dissertation defense. In addition, the main supervisor is also responsible for ensuring that the format of the dissertation is in accordance with the conditions set forth in this curriculum; and, must sign off on the dissertation indicating the same.

In the event that a main supervisor plans to be away from the university for an extended period, s/he must make sure that the candidate is made aware of such a period of absence (*e.g.*, academic leave). The supervisor must, in such cases, make suitable alternate arrangements through the Center.

15.2. Format and Structure of the PhD dissertation

Format of the doctoral dissertation shall be in accordance with the "Guideline for Dissertation and Thesis Write-up (2021)" (or any revisions thereof) set by the Vice-President for Research of AAU.

With respect to structure, the doctoral dissertation shall be composed of:

- a) a title and an abstract;
- b) an introductory chapter addressing the general problem, conceptual framework, literature review and methodological approach and the study area description;
- c) several chapters containing the standalone journal articles (at different stages of publication); and
- d) a synthesis chapter that pulls together the findings and their implications.

15.3. Submission and Examination of the Dissertation

As per AAU Legislation, to be eligible for a dissertation defense, the PhD candidate must have published a minimum of two articles in reputable journals (as per AAU's 2019 Senate

Legislation Article 121.4.3.) and it is the responsibility of the main supervisor to ascertain that this requirement is fulfilled. The main supervisor is also responsible for ensuring that the format of the dissertation is in accordance with the conditions set forth in this curriculum; and, must sign off on the dissertation indicating the same. The prospective graduate must also produce a dissertation which s/he must defend in an open public forum in the presence of a doctoral examining committee.

Following confirmation by the main supervisor, the Center shall constitute a doctoral examining committee composed of two dissertation examiners.

16. Duties and Responsibilities of PhD Candidates

PhD students/candidates have several responsibilities and duties. Candidates must acknowledge that earning the degree requires them to develop their intellectual independence while working under a supportive supervisor. Candidates must exhibit a high level of devotion and personal initiative as the University's senior students. Since they are primarily responsible for the conduct and advancement of the research, they should anticipate taking the lead in the majority of project-related decisions. They must be prepared to "drive" the project and to raise matters of concern promptly, without waiting for others to do so.

Some of the major responsibilities include: to attend and complete required course work; to commit adequate time and effort to the research project; be organized and capable of setting and meeting deadlines for different phases of the research; to acquire any new skills necessary as part of the research project; to maintain frequent and regular contact with the supervisors; to show initiative in identifying and resolving problems relating to the research project; to manage their time and work effectively so as not to place unreasonable demands on supervisors; to start writing their thesis as early as is practicable; to ensure that all written work is of a high scientific standard and organization; to meet the scholarly and professional standards required by their discipline; to present seminars when appropriate and participate in the academic, professional, and social life of the department; to attend and present papers at conferences and other platforms.

Candidates must understand that just as it is expected of supervisors to offer guidance and criticism, so too is it expected of candidates to pay attention to such guidance and criticism when it is given. Though ideally this would involve a healthy discussion, there will unavoidably be instances when this causes some friction. It is important to address any instances where having such a discourse is difficult or impossible as soon as feasible. Therefore, it rests on the candidate to take the initiative to resolve such type of conflict amicably.

17. Courses (Description, learning outcomes, methods of delivery and evaluation)

1	Course Title: Philosophy of Science Course Code: SDEV711 Credit /ECTS: 2 Crs/5 ECTS Prerequisite: None
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Course Description

This course addresses fundamental questions about the nature and development of scientific knowledge and understanding. The course focuses on key philosophical questions concerning science and various criticisms of it. Specifically, students will be exposed to the following questions: Is science objective? How do scientific theories get confirmed? What distinguishes science from pseudo-science? What justifies inductive reasoning as it is used in science? The course is intended to enhance student's capacity for working with their individual dissertation, and provide a broad orientation concerning central issues in the philosophy and ethics of science, as it applies to the use of various theoretical frameworks in their own work. The general themes of the course include: paradigmatic traditions- programmatic and methodological standpoints; controversies within the field of philosophy of science; interdisciplinary perspectives; the role of values in research; methodological implications and strategies; the building blocks of social science – definitions and concept-formation; descriptive strategies; traditions of interpretation; forms of aggregation and strategies of inference; forms of explanation and explanatory strategies; the practical use of theory; research ethics in the research process and the organization of research.

Learning Outcomes

Upon completion of the course, the student will be able to:

- demonstrate originality in the creation and application of knowledge, together with a practical understanding of how established techniques of research and inquiry are used to create and interpret knowledge;
- systematically explain key philosophical ideas, a critical awareness of current problems and new insights in philosophy of science;
- illustrate a comprehensive understanding of some techniques applicable to research in the field of sustainable development;
- relate a conceptual understanding that enables the student to evaluate critically current research in development studies and to evaluate methodologies and develop critiques of them.

Methods of Course Delivery

The course delivery method includes lecture, group discussions and debates, reading assignment, and review of selected book chapters and journal articles and presentation.

Method of Evaluation

Course evaluation is based on assessment of assignments and review reports, class presentation and final examination.

2	Course Title: Advanced Research Methods Course Code: SDEV712 Credit /ECTS: 3 Crs/7 ECTS Prerequisite: SDEV 711 Course Instructor (s):
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Course Description

This is an advanced research methods courses which introduces the students with major research methods appropriate for sustainable development research, covering a wide range of topics including established methods within the social science and development studies. The course focuses on quantitative, qualitative and mixed-method approaches. The quantitative part equips students with the necessary skills and knowledge to: allow interpretation and critical understanding of analysis of huge data; identify the right source of data; use appropriate study design; identify relevant measurement tools for the study variables; perform advanced statistical analyses and check the requirements and assumptions necessary for applying the statistical models. The qualitative methods part is designed to equip students with the methods to: demonstrate and apply qualitative research methods, principles and procedures in analyzing, validating, constructing, interpreting and theory building in sustainable development research. The course will also address the perspectives and techniques of combining qualitative and quantitative research approaches. Specifically, it deals with the rational and steps in combining quantitative and qualitative data, strategies in mixing the quantitative and qualitative data (sequential vs concurrent), and approaches in mixed methods: QUAN+qual and QUAL+quan.

Learning Outcomes

After successful completion of this course, students will be able to:

- conceptualize research problems in terms of research questions, hypotheses, and conceptual models;
- conceptualize and construct research design and identify appropriate research design for their doctoral research;
- critically analyze literature in terms of the appropriateness of the study design, sampling techniques, data analysis, results, and interpretation;
- recognize different types of data, and explain how the type of data determines the analysis techniques;
- apply statistical techniques and software to collect, manage and analyze data; and
- explain the assumptions underlying the different methods and recognize situations where data transformation or other method is appropriate.

Methods of Course Delivery

The course is delivered mainly through intensive lectures using face-to-face and online approaches as necessary. In addition, practical exercises and assignments on the application of

data analysis software, independent and group reading assignments, and proposal writing exercises will be used.

Method of Evaluation

Student evaluation for this course is based on reports of reading assignments, practical exercises on the use of data analysis software and research proposal development, and final exam.

3	<p>Course Title: Seminar on Sustainable Development: Global Goals and Local Realities</p> <p>Course Code: SDEV713</p> <p>Credit /ECTS: 2 Crs/5 ECTS</p> <p>Prerequisite: None</p>
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Course Description

This course will introduce students to national and international agenda related to sustainable development, including the 2030 Agenda and its 17 accompanying Sustainable Development Goals (SDGs). The course will provide an overview of the evolution of the sustainable development concept over the course of more than 3 decades and critically examines the contested nature of this evolving discourse. Lectures will highlight core features of the concept, including the underlying theory of change. What is the added value of international goal setting, and how does the international community justify ambitious global goals that are not legally binding? Are the SDGs merely a new framework to situate the development discourse? The lectures will identify and discuss the effectiveness of global and national institutional arrangements for achieving sustainable development as well as the availability of development finance. With a focus on specific case studies, the course will highlight how and to what extent the global sustainable development agenda has been operationalized at national and local levels. The course will also highlight a set of promising practices, as well as identify the most critical challenges ahead, including the need for a greater focus on addressing the politics of the sustainable development agenda.

Learning Outcomes

Upon successful completion of the course, students will be able to:

- paraphrase the major theoretical and empirical approaches to the study of sustainable development;
- distinguish what works, how and why in relation to global and national interventions aimed at promoting sustainable development;
- appraise the explicit role of politics in policies aimed at achieving sustainable development; and
- undertake comparative studies of sustainable development and SDGs implementation in differing national and local contexts.

Method of Course Delivery

A lecture and seminar methods will be used for this course. While the lectures focus on concepts and issues, the seminars will be prepared by the students on various topics. Selected reading materials (book chapters, journal articles, policy documents) are used for the course.

Method of Evaluation

Presentation and discussion based on guided reading materials, writing individual term papers, and final examination constitutes the methods of evaluation for this course.

4	Course Title: Policy and Governance for Sustainable Development Course Code: SDEV725 Credit /ECTS: 3 Crs/7 ECTS Prerequisite: None
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Course Description

The course will highlight the role of public policymaking on sustainable development, with a specific focus on policy coherence for achieving sustainable development. The role of the civil service, political leaders, and civil society in shaping public policy will be highlighted. The course will focus on three general themes: public policy, governance, and sustainable development. Topics to be covered will include fundamentals of policy and governance, key themes in public, governance, and sustainable development, strengthening of institutional effectiveness for SDGs and action plan for sustainable development. The course will be delivered in the context of Sustainable Development Goals and how they intersect will global, regional, and national policies for sustainable development as well as some of the major set of implementation challenges.

Learning Outcomes

Upon completion of this course, students will be able to:

- compare and contrast complex governance systems and policy processes on international, national, and local levels;
- demonstrate a sound understanding of concepts related to policy, governance, and sustainable development;
- acquire skills and strategies immediately applicable to policy and governance related projects within their work environment/country; and
- apply knowledge of the specific tools and approaches to promote sustainable development and policy coherence in the context of sustainable development goals.

Methods of Course Delivery

Lecture, reading assignments, review of selected papers and presentation.

Method of Evaluation

Student evaluation for this course is based on independent work on assignments, review of papers and presentation, and final examination.

5	Course Title: Sustainable Environmental Management Course Code: SDEV727 Credit /ECTS: 3 Crs/7 ECTS Prerequisite: None
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Course Description

This course explores the debates on natural resources use and environmental management from the perspective of sustainable development. It examines contemporary discourses on the management of the environment *vis-à-vis* sustainable development by particularly focusing on the tradeoffs among the social, economic and environmental pillars of sustainability. The course discusses these issues in a wide range of contexts including at the global, regional and local scales. The course will also examine the relevance of different strategies and instruments for environmental management that help to achieve the objectives of sustainable development. Cases will be used to illustrate the success and challenges of designing and introducing effective environmental management approaches, policies and strategies.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- explain the key issues and complexities of the nexus between environment and sustainable development;
- understand the debates surrounding environmental management and sustainable development;
- explain the concept of environmental management and environmentalism;
- critically analyze the interaction among the three main pillars of sustainable development: economy, environment and society;
- relate current issues and challenges in environmental management, and appraise the impacts of environmental change on food, energy and water security; and
- comprehend the institutional and legal frameworks necessary for sustainable environmental governance

Methods of Course Delivery

The course will be delivered using a range of participatory instructional methods, including interactive lectures, group discussions, student presentations, case studies, guest speakers on specific topics.

Method of Evaluation

Course evaluation is based on reading assignment and review reports, group presentation and final exam.

6	Course Title: Human Development and Sustainability Course Code: SDEV724 Credit /ECTS: 3 Crs/7 ECTS Prerequisite: SDEV 713
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Course Description

Poverty is an intrinsic component of the daily struggles for survival of more than one billion people in the developing world. This course introduces students to national and international policies that explain the continued existence of various types of poverty. It will thereafter introduce the concept of “human development”, which has been an influential approach in global development since the early 1990s. Specifically, the course will address particular topics such as extreme poverty and hunger, democracy and governance, environmental concerns, human rights and global morality and the measurement of progress in human development. The focus will be on enabling students to critically read and evaluate existing studies on poverty and human development and apply theoretical approaches to analyse development policies at international, national, and local levels. The course will also highlight comparative studies of human development promotion in differing contexts, illustrating major successes and failures of public policy.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- illustrate how poverty and human development are understood and measured, including the methodological challenges involved;
- describe the major theoretical and empirical approaches to the causation and production of chronic, acute and extreme poverty;
- identify, differentiate and analyse the impact of conventional and participatory approaches to poverty reduction;
- explain how and why official understandings of poverty may differ from those of people living in poverty;
- understand what works, how and why in relation to global and national anti-poverty and human development interventions;
- acquire insight into the explicit role of politics in the production and reduction of poverty and inequality; and
- evaluate the role and importance of ethics and morality in relation to global sustainable development research and policy

Methods of Course Delivery

Lectures, reading assignment and group presentation,

Method of Evaluation

Course evaluation is based on reading assignment and review reports, group presentation and final exam.

7	Course Title: Urban Sustainability Course Code: SDEV726 Credit /ECTS: 3 Crs/7 ECTS Prerequisite: SDEV713; SDEV725
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Course Description

The course deals with the social, economic and environmental dimensions of sustainable urban development. Some of the major themes explored include indicators of sustainability, urban demographic trends, environmental justice, green building, urban sprawl, sustainable energy and transportation, and global climate change. The course also introduces students to the emerging field of urban sustainability from multiple disciplinary perspectives, primarily industrial ecology, urban political ecology, urban ecology, and planning. The course provides students with the theoretical and methodological tools to explore the potential for a sustainable urbanism. In addition, the course deals with conceptualizing the linkage between cities and the green economy. It provides critical thinking on the opportunities and challenges for sustainable cities as engines of greening the economy. Cities have a crucial role to play in the creation of green economies that are pro-environment, pro-growth and pro-jobs.

Learning Outcomes

Upon successful completion of the course, students will be able to:

- comprehend the framework of sustainable development and the way it is applied to cities and urban areas;
- define indicators of urban sustainability, their application and limitations;
- assess whether a city is making progress toward sustainable urban development goals and objectives;
- understand the flows and forms of cities that contribute to sustainability; and
- describe the ways and practice of urban greening from the perspectives of greening the economy.

Methods of Course Delivery

Lectures, reading assignment and group presentation.

Method of Evaluation

Course evaluation is based on reading assignment and review reports, group presentation and final exam.

8	Course Title: Sustainable Development Planning and Management Course code: SDEV728 Credit /ECTS: 2 Crs/5 ECTS Prerequisite: None
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Course Description

This course examines the effectiveness of planning and development theories from the viewpoint of practitioners while considering the sustainability principle. It focuses on three main topics—planning, leadership, monitoring, and evaluation. To set a context, the course begins with a review and discussion of theories of sustainable development planning and management and then proceeds to discussion of the nature, characteristics, and principles of planning. Students will be introduced to various planning methods, fundamental operational and procedural tools, and the organizational principles of the sustainable development planning process. The focus is on the principles and practice of planning methodologies and tools that take sustainability into account. In addition, the course deals with the methods, techniques, and strategies used in sustainable development planning and implementation. Specifically, the course discusses Monitoring and Evaluation (M&E) skills and techniques as applied to the implementation and management of sustainable development projects and programs. As related to M&E processes, the course will also discuss data collection methodologies, the development and analysis of theories of change, log-frame development, and the use of various methods of verification.

Learning Outcomes

After successfully completing the course, students will be able to:

- describe the development planning process;
- illustrate the operational concept of sustainable development and its principal components of economic efficiency, environmental integrity and social equity;
- design methods and apply techniques in sustainable development planning;
- demonstrate the knowledge and skills to lead and manage development projects and programs;
- illustrate the logical framework approach and practice developing it; and
- apply knowledge and practical skills on monitoring and evaluation (M&E) techniques.

Methods of Course Delivery

Lectures, reading assignment, practical exercises and group presentation,

Method of Evaluation

Course evaluation is based on reading assignment and review of reports, assessment of group assignments and presentation, and final exam.

9	Course Title: Seminar on Food, Water and Energy Systems Course code: SDEV811 Credit /ECTS: 3 Crs/7 ECTS Prerequisite: SDEV727
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Course Description

Food, water and energy are resources are central elements to attain sustainable development. Particularly in light of booming population growth and urbanization, the supply of all three is strained and in peril. Securing these resources is a central global and local challenge. The course addresses the challenges regarding securing food, water and energy as vital issues in an ever evolving global circumstance, from both the local and global perspectives; with particular emphasis on developing countries. It explores the impact of climate change at the intersection of agriculture, water and energy nexus. The course considers how natural resource planning and management must be calibrated into balance to avert the risk of crisis on development and security. Hence, students will be exposed to discussions on the major food, nutrition and health, energy, water, and economic challenges human society face. In addition, the course will create the platform for students to effectively and respectfully debate, with people of opposing views, on issues related to food, water, and energy nexus.

Learning Outcomes

After successfully completing the course, students will be able to:

- identify the major food, water and energy challenges facing the globe and developing countries in particular;
- describe the intersectionality of food, water and energy sustainability;
- evaluate various policy and investment decisions and the challenges they pose and offer solutions; and
- discuss and debate positions/solutions on the best way forward to attain sustainable production and use of food, water and energy.

Methods of Course Delivery

Review of selected articles, reading assignments, presentation of case studies and group discussions.

Method of Evaluation

Course evaluation is based on individual case study report and presentation, active engagement in group discussions, reading assignment and final exam.

10	Course Title: Scientific Writing and Communication Course code: SDEV813 Credit /ECTS: 2 Crs/5 ECTS Prerequisite: None
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Course Description

Effective science communication is part and parcel of being a scientist. This course will deal with the art of scientific writing and publishing including the technical aspects of manuscript preparation and meeting journal guidelines. Student will learn how to use research data to compose a manuscript in standard scientific format, and prepare and present a poster to a general audience. In addition, students will learn the various publication repositories and how to make best use of them. The course will convey how upcoming scientists will gather scientific publications relevant to the scientific questions at hand and critically read the writing and glean the salient information. Moreover, the course also imparts the various components of and how to structure and deliver scientific communications, both in written (including posters) and oral. The course will also address the ethical limits of scientific communication with respect to authorship, collaboration and conflict of interest. It will also address how to choose a journal to submit an article, following editorial guidelines and the peer review process.

Learning Outcomes

After successfully completing the course, students will be able to:

- understand and analyze the various types and purposes of technical writing;
- identify the publication repositories relevant to their discipline;
- choose important papers relevant to their research question;
- apply the writing process to create an original scientific manuscript;
- understand scientific ethics and demonstrate ethical writing; and
- deliver an effective oral presentation and poster presentation.

Methods of Course Delivery

The course will center around lectures on writing and communication and supplemented with a series of assignments based on a student's chosen scientific study. The student will be required to undertake the following sequentially: a) present a synopsis of a selected published article, b) write up of a paper (with extensive literature review) c) editing of the write-up output by other classmates, c) in class discussion on editing exercise, d) preparation and oral presentation of slide presentation on edited output; and e) preparation and presentation of poster based on oral slide presentation.

Method of Evaluation

The performance of students will be based on the outputs they are required to generate, including in-class discussions.

11	Course Title: PhD Dissertation Course Code: SDEV 899 (a-f) Credit /ECTS: 12 Crs/28 ECTS Prerequisite: Approved research proposal
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Dissertation Research

The PhD candidate proceeds to the doctoral research only after completion of all the required courses and approval of the dissertation proposal by the CGC. The dissertation should be based on original research on a topic related to sustainable development. The format, structure and volume of the PhD dissertation should be according to AAU's guideline for thesis and dissertation writing. The dissertation research should be carried out under the supervision of a dissertation supervisor(s) assigned by the Center to ensure the required scientific quality and standard is met. PhD candidates are expected to closely work with their assigned supervisor(s).

Phases of the Dissertation Research work

The PhD dissertation consists of the following six phases. The student should register only for a single phase of the PhD thesis work per a semester. The student cannot register for the next phase in the next semester unless s/he demonstrated that the preceding phases have been successfully accomplished, as determined by his supervisor(s).

PhD Dissertation – I (SDEV899a): Literature review, proposal development & defense

The student is expected to undertake systematic review of up-to-date literature on his/her dissertation topic that helps him/her to shape and refine the research proposal. The student at this stage is expected to present his/her conceptual/literature map of the study to center's seminar or specific session to be organized for this purpose. In addition, the student will develop his/her proposal focusing on the originality of the research questions, statement of the problem and rationale with clear description of gaps in the proposed area of research including appropriate methodologies to address each of the objectives in consultation with his/her supervisor. The student at this stage is expected to produce his final proposal for review by dissertation proposal review committee as to be designated by the CGC.

PhD Dissertation – II (SDEV899b): Field Work

The student is expected to undertake field data collection and compile secondary data to be utilized for the production of his/her dissertation. At this stage the student may not complete his/her field data collection activities. However, he/she has to commence the activities and make significant progress with regard to acquiring bulk of the data required for the research.

PhD Dissertation – III (SDEV899c): Field work report and preliminary data analysis

The student is expected to complete his/her field data collection and/or compilation of secondary data to be utilized for the production of his/her dissertation. At this stage, the student is supposed to provide a detailed report of field activities, the data set collected and the methodological challenges and limitations. In addition, he/she is expected to undertake a

preliminary data analysis and present it in a departmental seminar or specific session to be organized for this purpose.

PhD Dissertation – IV (SDEV899d): Data analysis and preliminary findings

The student is expected to present the research work's preliminary findings of his major and other two [subsidiary] chapters of his/her dissertation work to departmental seminar or specific session to be organized for this purpose. The presentation shall include statement of the problem, objectives of the study, methods of data collection and analyses, study findings, discussions to be emanating from the study results and conclusion of the major research findings of one of the papers to be submitted for publication in peer reviewed journal.

PhD Dissertation – V (SDEV899e): Research report writing

By this stage the study must have completed all the analysis of data, and concretized his/her research findings. S/he is expected to prepare the remaining required number of manuscripts for submission to refereed journals and submit the same.

PhD Dissertation – VI (SDEV899f): Dissertation preparation and defense

The student is expected to complete the write-up of his/her dissertation and make it readily available for submission and prepare for a formal dissertation defense in consultation with his/her dissertation supervisor.