BATANGAS STATE UNIVERSITY'S
UNDERGRADUATE THESIS REQUIREMENTS AND GUIDELINES

I. RATIONALE

Undergraduate thesis is a collaboration effort between a student or group of students and an adviser in producing an innovative, creative, and original contribution to a given field of discipline, first by investigating that topic, then by sharing the findings through a conference presentation or journal publication. The research is not limited to the traditional sciences, but includes the arts, education, engineering, health sciences, humanities, or any other topic which interests a student. The research enhances the student's involvement in and knowledge of a given field and brings new ideas to all who are interested in that field, therefore encouraging further research or creative work.

In view of the foregoing, this set of guidelines is being proposed to ensure that common policies, procedures, and practices should be followed by all concerned in the conductof undergraduate researches and project studies in the College. Moreover,this shall assist the students, the instructor, the advisers, and the defense panel of the conduct of undergraduate thesis (Research Methodology, Thesis/Projects 1 and Thesis/Project 2).

II. LEGAL BASES

The guidelines set forth herein are anchored on the University's academic freedom under Section 5(2), Article XIV of the 1987 Constitution. Jurisprudence provides that one of the essential freedoms subsumed in the term 'academic freedom is that an educational institution can determine for itself on academic grounds "how subjects are to be taught".

III. GENERAL POLICIES AND COVERAGE

Section 1. General Policy on the University's Research Thrusts and Priorities. The following are the general policy on the research thrusts and priorities of Batangas State University:

a. The University shall pursue thrusts and priorities which may be subjected to review at least annually by each area: Architecture, Engineering and Technology; Agriculture and Natural Science; Environment and Biodiversity; Entrepreneurial and Business; and Education, Mathematics and Social Sciences to make the Research Program of the University responsive to the emerging needs and to environmental changes and development, depending on research competencies available, appropriateness to the local needs, and availability of resources;

b. The following thrusts and priorities are based on the national, regionaland provincial agenda of the government identified through agenda settingand road mapping among research personnel, deans, faculty researchers, students and external stakeholders: (i) food; (ii) energy; (iii) information and communications technology; (iv) manufacturing and process engineering; (v) science and mathematics; and (v) education and social sciences;[1] and

c. The research focus is subject to periodic review.

[1] As approved by Executive Committee of Batangas State University dated August 2014.

Section 2. Coverage. These guidelines shall cover the common policies, procedures, and practices that should be followed by all undergraduate students of Batangas State University in all its constituent and extension campuses now existing or will thereafter be created. Further, these shall likewise be followed by all instructors, advisers and defense panel in the conduct of undergraduate research.

Section 3. Grouping of Faculty Members into Research Clusters. The College shall adopt the grouping of faculty members into Research Clusters

IV. SPECIFIC GUIDELINES

Section 4. Thesis Syllabus. To prescribe the Project/Thesis duration and the equivalent credit units, Course Information Syllabus shall be used for the purpose in order to detail out the intended learning outcomes (ILO), assessment tasks, scope and contents, and outcomes mapping. Said Course Information Syllabus shall be used for Project/Thesis 1 and 2. [2]

Section 5. Timeline of Activities.[3] The following timelines shall be followed:

5.1. The timeline for the entire Project/Thesis period spans two semesters. (18 weeks for Project/Thesis 1 and 18 weeks for Project/Thesis 2). The major activities in the conduct of Project/Thesis 1 and 2 were scheduled accordingly to guide the instructor, adviser and students in the smooth and orderly implementation of the research guideline to ensure timely submission of deliverables and other documentary requirements.

5.2. For Project/Thesis 1, a period of 10 weeks shall be allotted for the preparation of research proposal, 4 weeks for oral defense and 4 weeks for revision of manuscript.

5.3. For Project/Thesis 2, a period of 14 weeks shall be allotted for the completion of the project, 4-weeks oral defense and 6 weeks for revision of manuscript.

5.4. During the foregoing periods, the course instructor shall guide the students on the research format and components. He/she may invite speakers to discuss the different components of the project/thesis. Further, he/she shall prepare the proposal defense schedule for the class.

The adviser on the other hand shall guide his/her advisees in the technical aspects of the project/thesis. He/She should also monitor the progress and completion of deliverables set in the timeline.

Section 6. Research/Project Groups. Students, as far as practicable, work in teams of three or more members depending on the complexity of the research/project and can choose their respective members upon the approval of the department chairperson and/or the Research Instructor. This provision, however, should not be construed as a bar for students to work individually or in pairs.

Collaborative research/project requiring multidisciplinary members in the team is also highly encouraged. The departments involved, through the chairpersons, shall document the extent and details of collaboration.

[2] See Appendix A-1. and A-2.
[3] See Appendix B.

The following shall be the guide as regards research/project grouping/s:

6.1. Students, as far as practicable, work in teams of three or more members depending on the complexity of the research/project and can choose their respective members upon the approval of the department chairperson and/or the Research Instructor. This provision, however, should not be construed as a bar for students to work individually or in pairs.

6.2. Collaborative research/project requiring multidisciplinary members in the team is also highly encouraged. The departments involved, through the chairpersons, shall document the extent and details of collaboration.

6.3. Regrouping is considered only when a member or two members left the team before the proposal presentation and not when the project has been started already. *Provided, That* the reasons for such must be valid, evaluated and accepted by both the adviser and course instructor. The member/s left behind may either choose to continue with the research/project or join other team/s, upon approval of course instructor and/or Department Chairperson.

Section 7. Topic Submission, Approval, and Selection Process. The guidelines on the submission, approval and selection process of topic/s shall follow the guidelines hereunder.

7.1. **Submission of Thesis/Project Topics.**

i. For each department, all regular faculty members and guest lecturers (optional) shall be a member of at least one (1) Research Cluster.

ii. As a member of the cluster, each faculty is required to submit topics covered in the cluster research area and those included in the Research Agenda.

iii. The number of topics to be submitted shall be determined by the number of groups taking the Thesis/Project course. This is in addition to the topics submitted by the respective students' groups bearing the endorsement of the prospective adviser.

iv. All topics shall conform with the prescribed Topic Proposal Form[4].

v. Topics shall be submitted to the Department Chairperson not later than **three (3)** weeks before the start of semester. The Department Chairperson shall organize the submitted documents into research cluster areas and then immediately submit to respective secretary of the research clusters.

7.2. **Thesis/Project Topic Evaluation Committee.** There shall be a Thesis/Project Topic Evaluation Committee to be created by the Chair of the Research Cluster. Said Committee shall be composed of a Research Cluster Chair as chairperson, and four (4) members of the Research Cluster. The committee shall be assisted by the Research Cluster Secretary appointed by the Research Cluster

[4] See Appendix C.

chair.

The Committee shall be guided by the following:

i. The committee shall meet within two (2) weeks before the start of semester for the deliberations and approval of the submitted topics.

ii. The list of approved topics shall be forwarded to the Office of the Dean for consolidation and posting through google sheets. Approved topics from students will not be included for posting.

iii. Those projects pending approval are given one (1) week to amend the topic based on the committee's comments and suggestions. The same shall be submitted again to the Research Cluster secretary for approval through circulation to the committee members for approval.

7.3. **Selection of Topics by Students.** The following shall guide the students in the selection of their respective topics:

i. Approved topics will be classified and posted by department.

ii. The Topic Selection Form[5] shall be filled up by the students (groups) who can list down up to 5 priority topics of interest.

iii. The group should discuss the topic with the prospective adviser (those who submitted the project title) to get the adviser's endorsement and mark the project "Taken".

Should the group failed to get the adviser's endorsement, they can move to the next priority topic in the list until they are able to get the endorsement of the adviser.

iv. Once endorsed by the adviser, the students (groups) should accomplish the Adviser Endorsement Form.[6]

v. One (1) copy should be given to the instructor for his/her reference and another copy should be kept by the adviser who in turn shall update the projects list in the google sheet(s) and mark the project as "taken". This activity should be carried out within **two (2) weeks** from start of semester.

7.4. **Thesis/Project Adviser/Co-Adviser.** The adviser and co-adviser are to be appointed by the Department Chairperson and approved by the Dean. As regards co-adviser, the project adviser needs to justify if co-adviser is required in the project. The co- adviser can be internal/external or may be from other programs as expertise is deemed necessary.

The project adviser, who must, as far as possible, be a full-time faculty member of the University, must have the following qualifications:

i. At least with an aligned master's degree/units in the area of the research/project;

[5] See Appendix D.
[6] See Appendix E.

ii. Must have effectively completed a similar research /project beyond the bachelor's degree;

iii. With reputable industry experience; and

iv. With at least two years residency in the department/ college and had previously served as panel of examiner of completed researches/projects.

As much as possible, Research/ project advisers should handle at most seven group advisees in any given term to provide quality supervision and monitoring.

Should it be determined that there is a need of an outside technical consultant, the same may be allowed, *Provide, That*, such is approved by the Department Chairperson. Further, in the event that the adviser becomes unavailable, a substitute adviser shall be assigned immediately by the course instructor with the approval of the Department Chairperson.

7.5. **Thesis/Project Advising and Progress Monitoring.** The adviser and the advisees shall meet regularly (at least twice a month) to monitor the progress of the thesis/project work. A log sheet[7] and progress report shall be accomplished by the students (group) during the meeting.

7.6. **Thesis/Project Defense Committee.** All individuals involved in the examination and approval of a research/ project is referred to as the panel of examiners or defense committee.

The department chair is responsible to create a Thesis/Project defense committee composed of regular faculty members who are also members of Research Clusters. The committee members include the chairman, one member from the program, one faculty expert (knowledgeable) in the topic area of the candidate. There shall be an Invitation for Examiners' Panel Member Form[8] to be used uniformly.

The creation of the panel of examiners or defense committee, and other matters related thereto, shall be guided by the following:

i. The chairman shall be chosen as the faculty member with the most qualified education, industrial experience, and/or research/project experience. Otherwise, the chairman will be selected on collegial basis.

ii. An external member who is a well-known expert in the area or field of the research/projectmay be also invited in case no qualified faculty member is available.

iii. For researches/projects with industry collaboration, a company representative may also serve as an external member.

iv. A faculty member/external panel is only allowed to sit as chairman up to one-half of the total number of

[7] See Appendix F.
[8] See Appendix G.

researches/projects at any period of time.

v. There shall be no limit in the assignment of panel membership.

vi. In case the chairman or a panel member is not available during oral defense schedule (either proposal or final), the research instructor with the approval of the department chairperson may re-schedule the defense or replace the unavailable panel.

vii. The College Dean may sit during any of the oral presentations. It is a duty of the College Dean to monitor whether standard scholarly works such as research/project undertakings are properly implemented.

7.7. **Proposal Defense.** The panel for proposal defense shall be composed of the Committee created under item 7.6 herein. If a member is not able to perform his/her duty on scheduled date, the department chair shall look for replacement or re-schedule the defense on agreed date. The conduct of the proposal defense shall be facilitated by the course instructor.

7.8. **Submission of Project/Thesis Report for Defense**. The students (group) are required to submit the Project/Thesis report not later than week 14. The required Project/Thesis Report Format[9] shall be used.

The copy of the Project/Thesis report and the journal/conference paper should include a similarity index report (plagiarism check). The overall similarity index shall not exceed 30% and each reference should have similarity index of not more than 5%. Above 30% will be subject for revision until the similarity index is below maximum ceiling. One week will be allotted for this revision.

7.9. **Submission of Journal/Conference Paper or an IP Asset Application Report**. The students (group) are required to submit a journal/conference paper which can be an extract of the Project/Thesis report. *Provided, However, That* if the Project/Thesis report is more suited for submission for intellectual property applications, the students should submit an IP invention, utility model or industrial design report. This shall be submitted to the IPOPhil by the concerned University office. The final copy of the journal/conference paper must adhere to the prescribed similarity index requirement.

7.10. **Final Defense.** The panel of examiners in the final defense may not necessarily be the same panel who sits in the proposal defense. If a member is not able to perform his/her duty on scheduled date, the instructor, with the approval of the department chair may look for replacement or re-schedule the defense on agreed date. The conduct of the final defense shall be facilitated by the course instructor.

The Project/Thesis oral defense can be scheduled from week 15 onwards.

Section 8. Project/Thesis Assessment and Rubrics. In accordance with Outcome-Based Education (OBE) framework, non-cognitive tasks shall be assessed

[9] Appendices H-1 to I-3.

through the use of appropriate rubrics. Rubrics will be used in the assessment of Project/Thesis report, Journal/Conference Paper, Oral Presentation, Meeting Record, and Peer Assessments.

The rubrics hereinabove stated are attached to these guidelines.[10]

Section 9. Student Researchers and Adviser Requirements. The project requirements hereunder must be followed by students, advisers, and panel of examiners:

9.1. The student researchers must:

i. Familiarize themselves on the research/project guidelines and policies

ii. Keep a log book/progress report recording all project work carried out and details of their project - dates, results, references, calculations etc. This should be available at all times for possible inspection by the adviser.

iii. Maintain regular contact with their adviser to report the progress of their work, as well as raise any issues or concerns (at least twice a month)

iv. Ensure that their log book is signed by the adviser at an absolute minimum of once every 2 weeks

v. Get their research/project inspected by the adviser within the allocated period

vi. Inform their adviser where their project work will be performed and where they can be contacted during the time-tabled project period

vii. Submit all documents and information on the dates prescribed

viii. In special cases, inform and ask approval of the adviser and the panel of examiners for the changes that will be done on the topic presented and approved in the proposal

ix. Strictly follow the schedule of research/project activities and submit required documents posted by Adviser, Department Chairman and the Defense Panel

9.2. The adviser must:

i. Ensures that the study proposed by the students conforms to the standards of the department/college and has immediate or potential impact on the research thrusts of the university

[10] Appendix J-1 to J-12.

ii. Provide reasonable assistance to aid the completion of the project

iii. Be able to evaluate if the research/project can be completed in the prescribed duration or period

iv. Clearly define the aims and objectives of the project and the envisioned result/s

v. Maintain regular contact with the students to supervise their research/project progress and help resolve impasse and conflicts

vi. Sign project log book along with suitable comments, advice etc. at least once every two weeks

vii. Keep a record of their contact with the student and the project work done in accordance with guidelines contained within this research/project information booklet

viii. Meets the team regularly (at least twice a month, NOTE: the team must seek proper appointment)

ix. Reviews thoroughly all deliverables at every stage of the Research / Project, to ensure that they meet the department's standards. The adviser may also require his/her Proponents/Researchers to submit progress reports regularly

x. Recommends the team for proposal and final oral presentation (It is assumed that the project has been evaluated in terms of readiness andcompleteness)

xi. Must be physically present during the proposal and final oral presentation to provide support and clarifications for and in behalf ofthe team

xii. Ensure that all necessary revisions, suggestions and recommendations are included in the deliverables before final submission and acceptance

Section 10. Writing and Submission of the Project/Thesis Report. The General Guide on Writing and Submission of Project/Thesis Reports as prescribed shall be followed by those covered by these guidelines.[11]

V. EFFECTIVITY. These guidelines shall take effect upon approval of the Academic Council.

[11] See Appendix K.

APPENDICES

Appendix A.1
Course Information Syllabus for Thesis/Project 1

Republic of the Philippines
BATANGAS STATE UNIVERISTY
(Name of Campus)
(Campus Address)

COLLEGE OF ENGINEERING, ARCHITECTURE AND FINE ARTS
NAME OF PROGRAM

COURSE INFORMATION SYLLABUS (CIS)

Vision	A premier national university that develops leaders in the global knowledge economy.			
Mission	A university committed to producing leaders by providing a 21st century learning environment through innovations in education, multidisciplinary research, and community and industry partnerships in order to nurture the spirit of nationhood, propel the national economy and engage the world for sustainable development.			
Course Title	*Title of the Course*		**Course Code**	*Course Code*
Course Category	*Gen Ed/Code/Elective/Specialization*		**Pre-requisite(s**	*Pre-req(s)*
Semester/Year			**Credit Hours**	*Credits*
Course Instructor	*Instructor*	*ID No.*	**Reference CM**	*CMO No.*
	Academic Qualification		**Date Prepared**	*Date*
	Email address/ Contact Number		**Revision No.:**	*0*
Period of Study	*Academic Calendar*		**Revision Date:**	
Course Rationale and Description	*Write the rationale and description of this course*			
Contact Hours	Hours Lecture			
	Hours Laboratory			
Criteria for Assessment	Logbook - 10% Assignments - 20% Research Proposal - 30% Oral Presentation - 30% Peer Assessment - 10%			
Teaching, Learning, and Assessment Strategies	This course will be delivered through blended teaching and learning on the research components and students presentations. Coordination with respective advisers will also be conducted to ensure smooth advising and monitoring of students progress.This course will be assessed through assignments, oral presentation, written report and plagiarism check, and peer assessment.			
Intended Learning Outcomes (ILO)	**ILO**	**Upon completion of this course, the students should be able to:**		
	ILO1	Formulate the research project objectives based on the established statement of the problem.		
	ILO2	Conduct critical literature review of the relevant topics of the project.		
	ILO3	Develop the appropriate research methodology of the project with Gantt Chart.		
	ILO4	Write the research proposal in accordance with research guideline.		
	ILO5	Practice ethical responsibility in writng the research proposal.		
	ILO6	Demonstrate active involvement in the preparation of research proposal		
	ILO7	Present the Proposal in Oral form		

Assessment Method and Distribution Map	**Assessment Tasks (AT) Distribution**			**Intended Learning Outcomes**							**Domains**		
Code	**Assessment Tasks**	**I/R/I**	**(%)**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**C**	**P**	**A**
LB	Logbook	D	10						100		100		
AS	Assignments	R	20	20	15	15				50	50		50
RP	Research Proposal	D	30	30	20	20	25	5			100		
OP	Oral Presentation	D	30							100			100
PA	Peer Assessment	R	10						100				100
	Total		**100**										
Note:	All internal assessments with feedback will be made available within 2 week after each												

Textbook	1	IEEEXplore Digital Library (http://ieeexplore.ieee.org/)
	2	BatSteU Library (https://library.batstate-u.edu.ph/#main/home)
Other Books and Articles	3	ProQuest (http://www.proquest.com/)
	4	Science Direct (https://www.sciencedirect.com/)
	5	Google Scholar (https://scholar.google.com/)
	6	Turnitin (www.turnitin.com)
	7	
	8	

Institutional Graduate Attributes (IGA)	**IGA**	**Institutional Graduate Attributes (IGA) Statements**
	IGA1	**Knowledge Competence**
		Demonstrate a mastery of the fundamental knowledge and skills required for functioning effectively as a professional in the discipline, and an ability to integrate and apply them effectively to practice in the workplace.
	IGA2	**Creativity and Innovation**
		Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve problems.
	IGA3	**Critical and Systems**
		Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.
	IGA4	**Communication**
		Communicate effectively (both orally and in writing) with a wide range of audiences, across a range of professional and personal contexts, in English and Pilipino.
	IGA5	**Lifelong Learning**
		Identify own learning needs for professional or personal development; demonstrate an eagerness to take up opportunities for learning new things as well as the ability to learn effectively on their own.
	IGA6	**Leadership, teamwork, and Interpersonal Skills**
		Function effectively both as a leader and as a member of a team; motivate and lead a team to work towards goal; work collaboratively with other team members; as well as connect and interact socially and effectively with diverse culture.
	IGA7	**Global Outlook**
		Demonstrate an awareness and understanding of global issues and willingness to work, interact effectively and show sensitivity to cultural diversity.
	IGA8	**Social and National Responsibility**
		Demonstrate an awareness of their social and national responsibility; engage in activities that contribute to the betterment of the society; and behave ethically and responsibly in social, professional and work environments.
Student Outcomes (SO)	**SO**	**Student Outcomes (SO) Statements**
	SO1	**Discipline Knowledge**
		An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
	SO2	**Design/Development of Solutions**
		An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, welfare, as well as global, cultural, social, environmental, and economic factors
	SO3	**Communication**
		An ability to communicate effectively with a range of audiences
	SO4	**Ethics and Professionalism**
		An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
	SO5	**Leadership and Teamwork**
		An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan task, and meet objectives
	SO6	**Investigation**
		Ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;
	SO7	**Lifelong Learning**
		An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
CDIO Framework Skills	**CDIO**	**CDIO Skills**
	CDIO1	**Disciplinary Knowledge & Reasoning**
		Knowledge of underlying mathematics and sciences, core engineering fundamental knowledge, advanced engineering fundamental knowledge, methods and tools
	CDIO2	**Personal and Professional Skills & Attributes**
		Analytical reasoning and problem solving; experimentation , investigation and knowledge discovery; system thinking; attitudes, thoughts and learning; ethics, equity
	CDIO3	**Interpersonal Skills: Teamwork & Communication**
		Teamwork, communications, communication in a foreign language
	CDIO4	**Conceiving, Designing, Implementing & Operating Systems**
		External, societal and environmental context, enterprise and business context, conceiving, systems engineering and management, designing, implementing, operating
Sustainable Development Goals Skills	**SDG**	**SDG Skills**
	SDG1	**Envisioning**
		Establish a link between long-term goals and and immediate actions, and motivate people to take action by harnessing their deep aspirations.
	SDG2	**Critical Thinking and Reflection**
		Examine economic, environmental, social and cultural structures in the context of sustainable development, and challenges people to examine and question the underlying assumptions that influence their world views by having them reflect on
	SDG3	**Systemic Thinking**
		Recognise that the whole is more than the sum of its parts, and it is a better way to understand and manage complex situations.
	SDG4	**Building Partnerships**
		Promote dialogue and negotiation, learning to work together, so as to strengthen ownership of and commitment to sustainable action through education and learning.
	SDG5	**Participation in Decision Making**
		Empower oneself and others through involvement in joint analysis, planning and control of local decisions.

COURSE POLICIES

A. GRADING SYSTEM

The grading system adopted by this course is as follows:

Excellent	1.00	98 - 100
Superior	1.3	94 - 97
Very Good	1.5	90 - 93
Good	1.8	88 - 89
Meritorious	2.00	85 - 87
Very Satisfactory	2.3	83 - 84
Satisfactory	2.50	80 - 82
Fairly Satisfactory	2.8	78 - 79
Passing	0	75 - 77
Failure	0	Below 70
Incomplete	INC	

*Students who got a computed grade of 70-74 will be given an appropriate remedial activity in which the final grade should be either passing (3.0) or failure (5.0).

B. CLASS POLICY

Prompt and regular attendance of students is required. Total unexcused absences shall not exceed ten (10) percent of the maximum number of hours required per course per semester (or per summer term). A semester has 18 weeks.

MISSED EXAMINATIONS

Students who failed to take the exam during the schedule date can be given a special exam provided he/she has valid reason. If it is health reason, he/she should provide the faculty with the medical certificate signed by the attending Physician. Other reasons shall be assessed first by the faculty to

ACADEMIC DISHONESTY

Academic dishonesty includes acts such as cheating during examinations or plagiarism in connection with any academic work. Such acts are considered major offenses and will be dealt with according to the University's Student Norms of Conduct.

DROPPING

Dropping must be made official by accomplishing a dropping form and submitting it at the Registrar's Office before the midterm examination. Students who officially drop out of class shall be marked "Dropped" whether he took the preliminary examination or not and irrespective of their preliminary grades.

A student who unofficially drops out of class shall be given a mark of "5.0" by the instructor.

C. OTHER COURSE POLICIES AND REQUIREMENTS

Teaching, Learning, and Assessment (TLA) Activities

Ch.	Topics / Reading List	Wks	Topic Outcomes	ILO	SO	Delivery Method
	Orientation & Introduction	1	Presentation of Syllabus, Class Rules			Discussion
1	Referencing and Plagiarism *In-text Citations* *Use of Software for Referencing (Mendeley, Zotero,etc)* Reading List:	2	To acquire knowledge and skills in proper in-text citations and referencing.	5	6	Lecture/ Discussion
2	Chapter 1. Introduction *Background of the Study* *Statement of the Problem* *Project Objectives* *Scope and Delimitation of the Project* Assignment No. 1 *Submission of Chapter 1. Presentation and Critiquing* *Meeting with Adviser*	2,3, 4	To develop skills in formulating project objectives based on defined problem statement	1,7	5,7	Lecture/ Discussion/ Assignment & Presentation
3	Chapter 2. Literature Review *Conceptual Literature* *Related Literature* *Synthesis* Assignment No. 2 *Submission of Chapter 2. Presentation and Critiquing* *Meeting with Adviser*	5,6	To write the appropriated acquire knowledge and skills in conducting critical review of literature.	2,7	2,7	Lecture/ Discussion/ Assignment & Presentation
4	Chapter 3. Research Methodology *Research Framework and Paradigm* *Research Methodology* *Data acquisition and analysis* *Gantt Chart* Assignment No. 3 *Submission of Chapter 3. Presentation and Critiquing* *Meeting with Adviser*	7,8	To develop the research framework and paradigm	3,7	3,7	Lecture/ Discussion/ Assignment & Presentation

5	Completion of the Research Proposal *Chapter 1 to Chapter 3* *Meeting with Adviser* *Submission of Research Proposal* *Meeting with Adviser*	9 - 10	To present the research output	1,2, 3	2,3, 5	Consultation
6	Oral Proposal Defense *Revision of the Research Proposal* *Meeting with Adviser*	11 - 14	To present the research output	7	7	Oral Presentation
7	Revision of Manuscript *Meeting with Adviser*	15 - 18	To act on panel comments			Consultation

Assessment Schedule		**Week No.**														
Assessment Method	**Distribution**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
	Logbook	x		x		x		x		x		x		x		x	x
	Assignments		x		x		x										
	Research Proposal									x							
	Oral Presentation												x				
	Peer Assessment														x		

ILO-SO and ILO-CPA Mapping	**ILOs**	**STUDENT OUTCOMES (SO): Mapping of Assessment Tasks (AT)**								
		SO2	**SO3**	**SO4**	**SO5**	**SO6**	**SO7**	**C**	**P**	**A**
	ILO1					AS,RP		AS,RP		
	ILO2					AS,RP		AS,RP		
	ILO3	AS,RP						AS,RP		
	ILO4						RP	RP		
	ILO5			RP				RP		
	ILO6				LB, PA					LB, PA
	ILO7		AS,OP							AS,OP

ILO-IGA Mapping	**ILOs**	**INSTITUTIONAL GRADUATE ATTRIBUTES (IGA): Mapping of Assessment Tasks (AT)**								
		IGA2	**IGA3**	**IGA4**	**IGA6**	**IGA8**				
	ILO1		AS,RP							
	ILO2		AS,RP							
	ILO3	AS,RP								
	ILO4					RP				
	ILO5					RP				
	ILO6				LB, PA					
	ILO7			AS,OP						

ILO-CDIO and ILO-SDG Mapping	**ILOs**	**CDIO SKILLS**				**SDG Skills**				
		CDIO2	**CDIO3**	**CDIO4**		**SDG2**	**SDG4**			
	ILO1	AS,RP				AS,RP				
	ILO2	AS,RP				AS,RP				
	ILO3			AS,RP		AS,RP				
	ILO4	RP				RP				
	ILO5	RP				RP				
	ILO6		LB, PA				LB, PA			
	ILO7		AS,OP			AS,OP				

Prepared by:	Reviewed by:	Approved by:
NAME Faculty Date:	**NAME** Department/Program Chairperson Date:	**NAME** College Dean/ Head, Academic Date:

Remarks:

1 The syllabus is to be distributed to the students in the first week of the semester.
2 Any changes to the syllabus shall be communicated (in writing) to the Program Chair and the approved revised version must be communicated to the students.
3 The course instructor may set a more stringent similarity percentage (minimum 20%) for their respective courses pertaining to student's submissions. However, it must be communicated in writing to the respective Program Chair and the approved revised version must be communicated to the students.

Appendix A.2
Course Information Syllabus for Thesis/Project 2

Republic of the Philippines
BATANGAS STATE UNIVERISTY
(Name of Campus)
(Campus Address)

COLLEGE OF ENGINEERING, ARCHITECTURE AND FINE ARTS
NAME OF PROGRAM

COURSE INFORMATION SYLLABUS (CIS)

Vision	A premier national university that develops leaders in the global knowledge economy.			
Mission	A university committed to producing leaders by providing a 21st century learning environment through innovations in education, multidisciplinary research, and community and industry partnerships in order to nurture the spirit of nationhood, propel the national economy and engage the world for sustainable development.			
Course Title	*Title of the Course*		**Course Code**	*Course Code*
Course Category	*Gen Ed/Code/Elective/Specialization*		**Pre-requisite(s)**	*Pre-req(s)*
Semester/Year			**Credit Hours**	*Credits*
Course Instructor	*Instructor*	*ID No.*	**Reference CMO**	*CMO No.*
	Academic Qualification		**Date Prepared**	*Date*
	Email address/ Contact Number		**Revision No.:**	*0*
Period of Study	*Academic Calendar*		**Revision Date:**	
Course Rationale and Description	*Write the rationale and description of this course*			
Contact Hours	Hours Lecture			
	Hours Laboratory			
Criteria for Assessment	Logbook - 10% Project Report - 35% Conference Paper - 15% Oral Presentation - 30% Peer Assessment - 10%			
Teaching, Learning, and Assessment Strategies	This course covers the implementation of the research proposal to achieved the desired objectives. This course should be delivered through regular consultation with the adviser and propoer coordination with the instructor in accordance with the estrablished research guideline. The adviser should monitor the student's progress through regular meeting with the adviser using logbook. Skills that can be demonstrated include leadership and teamwork, communication, ethical and professional responsibility, and critical thinking, among others.			

Intended Learning Outcomes (ILO)	**ILO**	**Upon completion of this course, the students should be able to:**
	ILO1	Assess the research methodology through any of the following techniques - design and prototype modeling, simulations, mathematical modeling, experimentation, case studies, and statistical methods, among others.
	ILO2	Implement the methodology towards attaining the desired results based on defined objectives.
	ILO3	Demonstrate active involvement in the completion of the research project.
	ILO4	Write the final manuscript in accordance to research guideline.
	ILO5	Conduct analysis of the project with consideration on project management.
	ILO6	Write the conference paper of the completed research project report.
	ILO7	Present the project in oral form

Assessment Method and Distribution Map

Assessment Tasks (AT) Distribution				**Intended Learning Outcomes**							**Domains**		
Code	**Assessment Tasks**	**I/R/D**	**(%)**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**C**	**P**	**A**
LB	Log Book	D	10			100					100		
CP	Conference Paper	D	15						50	50	50		50
PR	Project Report	D	35	15	40		35	10			100		
OP	Oral Presentation	D	30							100			100
PA	Peer Assessment	D	10			100							100
	Total		**100**										
Note:	All internal assessments with feedback will be made available within 2 week after each												

Textbook	1	IEEEXplore Digital Library (http://ieeexplore.ieee.org/)
	2	BatSteU Library (https://library.batstate-u.edu.ph/#main/home)
Other Books and Articles	3	ProQuest (http://www.proquest.com/)
	4	Science Direct (https://www.sciencedirect.com/)
	5	Google Scholar (https://scholar.google.com/)
	6	Turnitin (www.turnitin.com)
	7	
	8	

Institutional Graduate Attributes (IGA)	**IGA**	**Institutional Graduate Attributes (IGA) Statements**
	IGA1	**Knowledge Competence**
		Demonstrate a mastery of the fundamental knowledge and skills required for functioning effectively as a professional in the discipline, and an ability to integrate and apply them effectively to practice in the workplace.
	IGA2	**Creativity and Innovation**
		Experiment with new approaches, challenge existing knowledge boundaries and design novel solutions to solve problems.
	IGA3	**Critical and Systems Thinking**
		Identify, define, and deal with complex problems pertinent to the future professional practice or daily life through logical, analytical and critical thinking.
	IGA4	**Communication**
		Communicate effectively (both orally and in writing) with a wide range of audiences, across a range of professional and personal contexts, in English and Pilipino.
	IGA5	**Lifelong Learning**
		Identify own learning needs for professional or personal development; demonstrate an eagerness to take up opportunities for learning new things as well as the ability to learn effectively on their own.
	IGA6	**Leadership, teamwork, and Interpersonal Skills**
		Function effectively both as a leader and as a member of a team; motivate and lead a team to work towards goal; work collaboratively with other team members; as well as connect and interact socially and effectively with diverse culture.
	IGA7	**Global Outlook**
		Demonstrate an awareness and understanding of global issues and willingness to work, interact effectively and show sensitivity to cultural diversity.
	IGA8	**Social and National Responsibility**
		Demonstrate an awareness of their social and national responsibility; engage in activities that contribute to the betterment of the society; and behave ethically and responsibly in social, professional and work environments.
Student Outcomes (SO)	**SO**	**Student Outcomes (SO) Statements**
	SO1	**Discipline Knowledge**
		An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
	SO2	**Design/Development of Solutions**
		An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, welfare, as well as global, cultural, social, environmental,
	SO3	**Communication**
		An ability to communicate effectively with a range of audiences
	SO4	**Ethics and Professionalism**
		An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global,
	SO5	**Leadership and Teamwork**
		An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan task, and meet objectives
	SO6	**Investigation**
		Ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;
	SO7	**Lifelong Learning**
		An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
CDIO Framework Skills	**CDIO**	**CDIO Skills**
	CDIO1	**Disciplinary Knowledge & Reasoning**
		Knowledge of underlying mathematics and sciences, core engineering fundamental knowledge, advanced engineering fundamental knowledge, methods and tools
	CDIO2	**Personal and Professional Skills & Attributes**
		Analytical reasoning and problem solving; experimentation , investigation and knowledge discovery; system thinking; attitudes, thoughts and learning; ethics, equity and other
	CDIO3	**Interpersonal Skills: Teamwork & Communication**
		Teamwork, communications, communication in a foreign language
	CDIO4	**Conceiving, Designing, Implementing & Operating Systems**
		External, societal and environmental context, enterprise and business context, conceiving, systems engineering and management, designing, implementing, operating
Sustainable Development Goals Skills	**SDG**	**SDG Skills**
	SDG1	**Envisioning**
		Establish a link between long-term goals and and immediate actions, and motivate people to take action by harnessing their deep aspirations.
	SDG2	**Critical Thinking and Reflection**
		Examine economic, environmental, social and cultural structures in the context of sustainable development, and challenges people to examine and question the underlying assumptions that influence their world views by having them reflect on unsustainable practices.
	SDG3	**Systemic Thinking**
		Recognise that the whole is more than the sum of its parts, and it is a better way to understand and manage complex situations.
	SDG4	**Building Partnerships**
		Promote dialogue and negotiation, learning to work together, so as to strengthen ownership of and commitment to sustainable action through education and learning.
	SDG5	**Participation in Decision Making**
		Empower oneself and others through involvement in joint analysis, planning and control of local decisions.

COURSE POLICIES

A. GRADING SYSTEM

The grading system adopted by this course is as follows:

Excellent	1.00	98 - 100
Superior	1.3	94 - 97
Very Good	1.5	90 - 93
Good	1.8	88 - 89
Meritorious	2.00	85 - 87
Very Satisfactory	2.3	83 - 84
Satisfactory	2.50	80 - 82
Fairly Satisfactory	2.8	78 - 79
Passing	3.00	75 - 77
Failure	5.00	Below 70
Incomplete	INC	

*Students who got a computed grade of 70-74 will be given an appropriate remedial activity in which the final grade should be either passing (3.0) or failure (5.0).

B. CLASS POLICY

Prompt and regular attendance of students is required. Total unexcused absences shall not exceed ten (10) percent of the maximum number of hours required per course per semester (or per summer term). A semester has 18 weeks.

MISSED EXAMINATIONS

Students who failed to take the exam during the schedule date can be given a special exam provided he/she has valid reason. If it is health reason, he/she should provide the faculty with the medical certificate signed by the attending Physician. Other reasons shall be assessed first by the faculty to determine its validity.

ACADEMIC DISHONESTY

Academic dishonesty includes acts such as cheating during examinations or plagiarism in connection with any academic work. Such acts are considered major offenses and will be dealt with according to the University's Student Norms of Conduct.

DROPPING

Dropping must be made official by accomplishing a dropping form and submitting it at the Registrar's Office before the midterm examination. Students who officially drop out of class shall be marked "Dropped" whether he took the preliminary examination or not and irrespective of their preliminary grades.
A student who unofficially drops out of class shall be given a mark of "5.0" by the instructor.

C. OTHER COURSE POLICIES AND REQUIREMENTS

Teaching, Learning, and Assessment (TLA) Activities

Ch.	Topics / Reading List	Wks	Topic Outcomes	ILO	SO	Delivery Method
	Orientation & Introduction	1	Presentation of Syllabus, Class Rules			Discussion
1	Rewriting the First 3 Chapters *Intrduction* *Literature Review* *Research Methodology* *Writing a Conference/Journal Paper* *Meeting with adviser*	2,3	Write the first 3 chapters of the project	3	4	1. Consultation with Adviser 2. Follow up by Instructor
2	Project Implementation *Chapter 4 and Chapter 5* *Failure/Success Analysis of the Project* *Conclusion and Recommendation* *Turnitin Submission* *Meeting with Adviser*	4 to 14	Implement the research methodology towards achieving the set objectives	1, 2, 3, 4, 5	2, 3, 4, 6	Consultation with Adviser
4	Final Oral Defense *Preparation of Presentation* *Mock Presentation (if possible)*	15-18	Topic 4 outcome	3, 7	4, 7	Oral form
5	Completion of Final Requirements *Meeting with Adviser* *Revision of Manuscript* *Writing of Conference/Journal Paper* *Submission of the Final Manuscript* *Submission of Conference/Journal Paper*	19 to 24		3,6	4	Consultation

Assessment Schedule		Week No.															
Assessment Method	**Distribution**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
	Log Book	x		x		x		x		x		x	x	x			x
	Project Report	x		x		x		x		x		x	x	x			x
	Conference Paper																x
	Oral Presentation														x		
	Peer Assessment																x

ILO-SO and ILO-CPA Mapping	**ILOs**	**STUDENT OUTCOMES (SO): Mapping of Assessment Tasks (AT)**								
		SO2	**SO3**	**SO4**	**SO5**	**SO6**	**SO7**	**C**	**P**	**A**
	ILO1	PR						PR		
	ILO2					PR		PR		
	ILO3				PA		LB			LB, PA
	ILO4				PR			PR		
	ILO5			PR				PR		
	ILO6		CP					CP		CP
	ILO7		CP, OP					CP		CP, OP

ILO-IGA Mapping	**ILOs**	**INSTITUTIONAL GRADUATE ATTRIBUTES (IGA): Mapping of Assessment Tasks (AT)**								
		IGA2	**IGA3**	**IGA4**	**IGA5**	**IGA6**	**IGA8**			
	ILO1	PR								
	ILO2		PR							
	ILO3				LB	PA				
	ILO4						PR			
	ILO5				PR					
	ILO6			CP	CP					
	ILO7			OP						

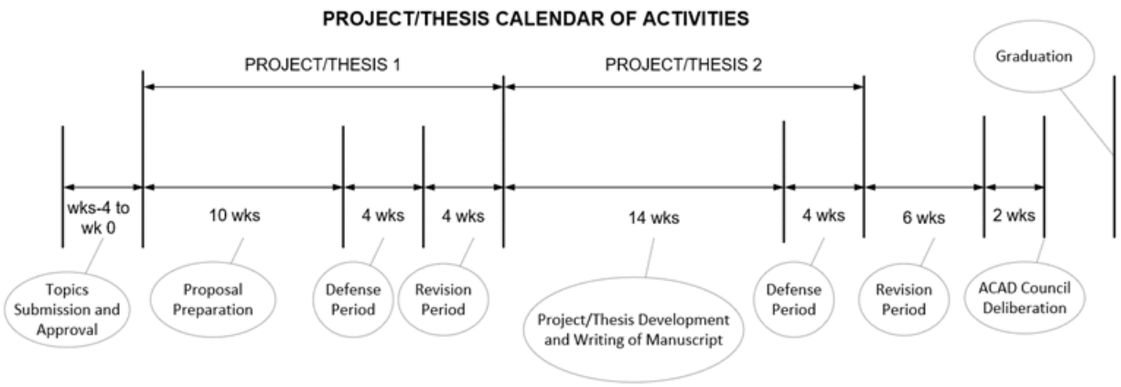
ILO-CDIO and ILO-SDG Mapping	**ILOs**	**CDIO SKILLS**				**SDG Skills**				
		CDIO2	**CDIO3**	**CDIO4**		**SDG2**	**SDG4**			
	ILO1			PR		PR				
	ILO2	PR				PR				
	ILO3		LB, PA				LB, PA			
	ILO4	PR				PR				
	ILO5	PR				PR				
	ILO6	CP				CP				
	ILO7		OP			OP				

Prepared by:	Reviewed by:	Approved by:
NAME Faculty Date:	**NAME** Department/Program Chairperson Date:	**NAME** College Dean/ Head, Academic Affairs Date:

Remarks:

1 The syllabus is to be distributed to the students in the first week of the semester.
2 Any changes to the syllabus shall be communicated (in writing) to the Program Chair and the approved revised version must be communicated to the students.
3 The course instructor may set a more stringent similarity percentage (minimum 20%) for their respective courses pertaining to student's submissions. However, it must be communicated in writing to the respective Program Chair and the approved revised version must be communicated to the students.

Appendix B


PROJECT/THESIS CALENDAR OF ACTIVITIES
PROJECT/THESIS 1
PROJECT/THESIS 2
Graduation
wks-4 to wk 0
10 wks
4 wks
4 wks
14 wks
4 wks
6 wks
2 wks
Topics Submission and Approval
Proposal Preparation
Defense Period
Revision Period
Project/Thesis Development and Writing of Manuscript
Defense Period
Revision Period
ACAD Council Deliberation

Appendix C.
Topic Proposal Form

Republic of the Philippines
BATANGAS STATE UNIVERSITY
BATSTATEU ALANGILAN, Alangilan, Batangas City
College of Engineering, Architecture and Fine Arts
www.batstate-u.edu.ph Tel. No. (043) 425-0139 loc. 118/2121

THESIS/PROJECT TOPIC PROPOSAL FORM
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Project Title:		
Research Cluster:		
Project Adviser:		
Co-Adviser	*Justify why co-adviser is needed in the project.*	Name of Co-Adviser
SDGs Addressed:		
Date Submitted:		
Project Duration:		
Project Abstract:	*Briefly describe the problem(s) and its background. Use extra sheet if necessary.*	
Pre-Requisite(s):	*Courses, programming skills, soft and hard skills, etc.*	
Research Questions:	1.	
Research Objectives:	1.	
Resources Needed:		
Are the existing facilities at the College sufficient to carry out this project work? (Yes/No)		
Does the student need special training to use any College lab equipment? (Yes/No) If yes, how will this be provided?		
Budget (Please provide details of budget requirement)		
Is there any external financial assistance to support this project? (Yes/No)		
Signature of Adviser	Date Submitted:	

Checklist to be verified by the Research Cluster Leader based on the deliberations by the Topic Evaluation Committee.

Please tick appropriately and put N/A if not applicable

No.	Particulars	Tick
1	The topic falls within the scope of the Research Cluster.	
2	The topic proposal meets the expectation of the Research Cluster (Clear background and statement of the research problem, research questions, and objectives).	
3	The adviser has the experience and relevant background to supervise the proposed Thesis/Project	
4	If project is not related to the same program or background of the adviser, there is a co-adviser who is in the same program and has the expertise.	
5	The budget is appropriate for the project	

Additional Comments/Suggestions by the Topic Evaluation Committee:
1.

Decision of the Topic Evaluation Committee (RC)

	Approved		**Needs Improvement**		**Disapproved**

Signed by Research Cluster Chairman

_____
Signature over Printed Name
Date: _____

Appendix D
Topic Selection Form

Republic of the Philippines
BATANGAS STATE UNIVERSITY
BatStateU Alangilan
Alangilan, Batangas City
College of Engineering, Architecture and Fine Arts
https://batstate-u.edu.ph/, Tel. No. (043) 425-0139 loc. 118/2121

Topic Selection Form

Instruction:

1. Students (groups) are advised to get topics from your department's list of approved projects only.
2. List down the approved topics that your group are interested to pursue. Arrange them according to your priorities of interest.
3. Discuss with the adviser each of the topics listed to secure his/her endorsement of **at most 1** topic only and marked it as "taken" in the status column.
4. If you fail to get his/her endorsement, move to the next in the list until you secure 1 endorsement.
5. If you fail to secure any endorsement, fill up a new set of topics of interest and repeat from item 1.
6. Once endorsed, get the signature of your adviser, instructor and the department chair. Give a copy to your adviser, and the instructor.

No.	Project Code	Title of Project/Thesis	Signature of Potential Adviser	Status
1				
2				
3				
4				
5				

Submitted by:

Leader : _____ _____

Member : _____ _____

Member : _____ _____

Member : _____ _____

Endorsed by:

Adviser

Recommending Approval:

Instructor

Approved: _____
Department Chair

Date Accomplished: _____

Appendix E
Adviser Endorsement Form

Republic of the Philippines
BATANGAS STATE UNIVERSITY
College of Engineering, Architecture and Fine Arts
BATSTATEU ALANGILAN, Alangilan, Batangas City
www.batstate-u.edu.ph Tel. No. (043) 425-0139 loc. 118/2121

ADVISER ENDORSEMENT FORM
_____ Department

Date: _____

TO: _____

Dear Sir/Madam:

Greetings!

One of the courses under the ***Bachelor of Science in Program, Course Code – Course title*** requires the students to have a Thesis Proposal. This will be presented and evaluated to a panel of examiners. Through this activity, the students will learn how to present and defend their idea; learn to communicate well; how to write a research report; scrutinize and organize thoughts of their discussions, and, check the viability of implementing the research proposal in terms of scope, time and budget.

In relation to this, may we request your endorsement of our group to be your advisee Thesis topic entitled:

_____
_____

We would like also to inform you that the Department released an Undergraduate Thesis Guidelines that will guide us in the conduct of our Thesis.

With the assistance of a professional like yourself, who has technical know-how on the topic, it will be of great help for our group in the conceptualization and implementation of our Thesis.

Hope this request and information will merit your approval.

Respectfully yours,

_____
Group Representative

Conforme:

_____
Date: _____

Approved:

_____
Department Chair, ___ Dept

To be accomplished in duplicate (1 copy to the adviser, 1 copy to the instructor)

Appendix F
Meeting Record and Progress Report Form

Republic of the Philippines
BATANGAS STATE UNIVERSITY
BatStateU Alangilan
Alangilan, Batangas City
College of Engineering, Architecture and Fine Arts
https://batstate-u.edu.ph/, Tel. No. (043) 425-0139 loc. 118/2121

MEETING RECORD AND PROGRESS REPORT FORM
(To be completed and signed after each regular meeting)

Project Code :_____
Project Title :_____
Adviser :_____
Date of Meeting :_____

Progress Report since last meeting

Completion of Progress Plan from Previous Meeting
(This section is to be filled up by the adviser. Please refer to previous meeting record sheet)

Is Gantt Chart Followed ☐ Yes ☐ No

Percentage of Completion from Day 1 _____

Remarks:

Items discussed in this meeting:

Scheduled Progress Plan for Next Meeting:

Prepared by:

Group Members: 1. _____ _____

2. _____ _____

3. _____ _____

4. _____ _____

Approved: _____ _____

Adviser

Appendix G.
Invitation for Examiners' Panel Member Form

Republic of the Philippines
BATANGAS STATE UNIVERSITY
College of Engineering, Architecture and Fine Arts
BATSTATEU ALANGILAN, Alangilan, Batangas City
www.batstate-u.edu.ph Tel. No. (043) 425-0139 loc. 118/2121

ADVISER ENDORSEMENT FORM
_____ Department

Date: _____

TO: _____

Dear Sir/Madam:

Greetings!

One of the courses under the ***Bachelor of Science in Program*, *Course Code – Course title*** requires the students to have a Thesis Proposal. This will be presented and evaluated to a panel of examiners. Through this activity, the students will learn how to present and defend their idea; learn to communicate well; how to write a research report; scrutinize and organize thoughts of their discussions, and, check the viability of implementing the research proposal in terms of scope, time and budget.

In relation to this, may we request your endorsement of our group to be your advisee Thesis topic entitled:

_____

_____

We would like also to inform you that the Department released an Undergraduate Thesis Guidelines that will guide us in the conduct of our Thesis.

With the assistance of a professional like yourself, who has technical know-how on the topic, it will be of great help for our group in the conceptualization and implementation of our Thesis.

Hope this request and information will merit your approval.

Respectfully yours,

_____
Group Representative

Conforme:

_____
Date: _____

Approved:

_____
Department Chair, ___ Dept

To be accomplished in duplicate (1 copy to the adviser, 1 copy to the instructor)

Appendix H-1
Suggested Thesis/Project 1 Structure

EXPERIMENTAL RESEARCH

TITLE PAGE
DECLARATION
APPROVAL
DEDICATION
ACKNOWLEDGMENT
EXECUTIVE SUMMARY/ABSTRACT
TABLE OF CONTENTS
LIST OF FIGURES
LIST OFTABLES
LIST OF EQUATIONS
LIST OF ABBREVIATIONS AND SYMBOLS
CHAPTEE 1. INTRODUCTION
INTRODUCTION
1.1 BACKGROUND OF THE STUDY
1.2 STATEMENT OF THE PROBLEM
1.3 RESEARCH QUESTIONS
1.4 RESEARCH OBJECTIVES
1.5 RESEARCH HYPOTHESIS
1.6 SCOPE AND DELIMITATION OF THE STUDY
1.7 IMPORTANCE OF THE STUDY
CHAPTER 2. LITERATURE REVIEW
2.1 CONCEPTUAL LITERATURE
2.2 RELATED LITERIATURE
2.3 SYNTHESIS
CHAPTER 3. EXPERIMENTS AND METHODS
3.1 CONCEPTUAL FRAMEWORK
3.2 EXPERIMENTAL DESIGN AND PROCEDURE
3.3 EQUIPMENT/FACILITIES/PROGRAMS
3.4 DATA COLLECTION AND TREATMENT
3.5 BUDGET REQUIREMENTS
3.6 EXPECTED OUTPUT
3.7 GANTT CHART

DESIGN AND DEVELOPMENT RESEARCH

TITLE PAGE
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DEDICATION
ACKNOWLEDGMENT
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1.2 STATEMENT OF THE PROBLEM
1.3 RESEARCH QUESTIONS
1.4 RESEARCH OBJECTIVES
1.5 RESEARCH HYPOTHESIS
1.6 SCOPE AND DELIMITATION OF THE STUDY
1.7 IMPORTANCE OF THE STUDY
CHAPTER 2. LITERATURE REVIEW
2.1 CONCEPTUAL LITERATURE
2.2 RELATED LITERIATURE
2.3 SYNTHESIS
CHAPTER 3. DESIGN AND METHODS
3.1 CONCEPTUAL FRAMEWORK
3.2 TECHNICAL DESIGN AND PROCEUDRE
3.3 EQUIPMENT/FACILITIES/PROGRAMS
3.4 DATA COLLECTION AND TREATMENT
3.6 BUDGET REQUIREMENTS
3.7 EXPECTED OUTPUT
3.8 GANTT CHART

Appendix H-2
Suggested Thesis/Project 1 Structure

SOFTWARE DEVELOPMENT

TITLE PAGE
DECLARATION
APPROVAL
DEDICATION
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1.4 RESEARCH OBJECTIVES
1.5 RESEARCH HYPOTHESIS
1.6 SCOPE AND DELIMITATION OF THE STUDY
1.7 IMPORTANCE OF THE STUDY
CHAPTER 2. LITERATURE REVIEW
2.1 CONCEPTUAL LITERATURE
2.2 RELATED LITERIATURE
2.3 SYNTHESIS
CHAPTER 3. SOFTWARE AND METHODS
3.1 CONCEPTUAL FRAMEWORK
3.2 SOFTWARE DESIGN AND PROCEDURE
3.3 HARDWARE/FACILITIES
3.4 DATA COLLECTION AND TREATMENT
3.6 BUDGET REQUIREMENTS
3.7 EXPECTED OUTPUT
3.8 GANTT CHART

MATHEMATICAL MODELING AND SIMULATIONS

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1.3 RESEARCH QUESTIONS
1.4 RESEARCH OBJECTIVES
1.5 RESEARCH HYPOTHESIS
1.6 SCOPE AND DELIMITATION OF THE STUDY
1.7 IMPORTANCE OF THE STUDY
CHAPTER 2. LITERATURE REVIEW
2.1 CONCEPTUAL LITERATURE
2.2 RELATED LITERIATURE
2.3 SYNTHESIS
CHAPTER 3. MATHEMATICAL MODEL AND METHODS
3.1 CONCEPTUAL FRAMEWORK
3.2 MATHEMATICAL MODEL/SIMULATION DESIGN
3.3 SOFTWARE/FACILITIES
3.4 DATA COLLECTION AND TREATMENT
3.5 BUDGET REQUIREMENTS
3.6 EXPECTED OUTPUT
3.7 GANTT CHART

Appendix H-3
Suggested Thesis/Project 1 Structure

DESCRIPTIVE RESEARCH

TITLE PAGE
DECLARATION
APPROVAL
DEDICATION
ACKNOWLEDGMENT
EXECUTIVE SUMMARY/ABSTRACT
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LIST OF EQUATIONS
LIST OF ABBREVIATIONS AND SYMBOLS

CHAPTEE 1. THE PROBLEM AND ITS BACKGROUND

INTRODUCTION
1.1 BACKGROUND OF THE STUDY
1.2 STATEMENT OF THE PROBLEM
1.3 RESEARCH QUESTIONS
1.4 RESEARCH OBJECTIVES
1.5 RESEARCH HYPOTHESIS
1.6 SCOPE AND DELIMITATION OF THE STUDY
1.7 IMPORTANCE OF THE STUDY

CHAPTER 2. LITERATURE REVIEW

2.1 CONCEPTUAL LITERATURE
2.2 RELATED LITERIATURE
2.3 SYNTHESIS

CHAPTER 3.RESEARCH METHODOLOGY

3.1 CONCEPTUAL FRAMEWORK
3.2 RESEARCH DESIGN AND METHODOLOGY
3.3 DATA COLLECTION
3.4 STATISTICAL TREATMENT
3.5 BUDGET REQUIREMENTS
3.6 EXPECTED OUTPUT
3.7 GANTT CHART

DESIGN AND ANALYSIS

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DEDICATION
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LIST OFTABLES
LIST OF EQUATIONS
LIST OF ABBREVIATIONS AND SYMBOLS

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DESIGN AND DEVELOPMENT RESEARCH

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SOFTWARE DEVELOPMENT

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MATHEMATICAL MODELING AND SIMULATIONS

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Appendix J-1
Thesis/Project 1 Report Assessment Rubric

	Proposal Report Assessment Rubric (Thesis 1)					
	Group No.:					
	Project:					
	Assessor:					
	Project/Thesis 1					
	Research Proposal Report (30%)					
	Area	**Total Marks**	**Weight-age**	**Actual Marks**	**Scoring Band**	**Criteria**
ILO4	Writing Style, Format and Structure		0.5		8 - 10	The proposal has all the sections **PRESENTED** in a neat and tidy manner as per guidelines.
					5 - 7	The proposal has most sections **PRESENTED** in a neat and tidy manner as per guidelines.
					3 - 4	The proposal has most scetions **PRESENTED** in a messy manner and do not follow the guidelines.
					0 - 2	Inadequate sections **PRESENTED** in a messy manner and do not follow the guidelines.
ILO1	Introduction		1.0		8 - 10	Introduction shows clear research background, statement of the problem, research questions, objectives, hypotheses and scope. This includes clearly mentioning the significance to address problems arising from technical, engineering and other issues.
					5 - 7	Introduction shows unclear research background, statement of the problem, research questions, objectives, hypotheses and scope. This includes somewhat clear mention of the significance to address problems arising from technical, engineering and other issues.
					3 - 4	Introduction states unclear research background, statement of the problem, research questions, objectives, hypotheses and scope. Significance to address problems arising from technical, engineering and other issues is not clear.
					0 - 2	Introduction states unclear research background, statement of the problem, research questions, objectives, hypotheses and scope. Significance to address problems arising from technical, engineering and other issues is not identified.
ILO2	Critical Literature Review		2.0		8 - 10	Literature reviewed is comprehensive, relevant and up to date. Clear attempt to critically discuss the literature reviewed and highlight the gaps in current literature with accordance to technological change.
					5 - 7	Literature reviewed is relevant and up to date. Some attempt to critically discuss the literature reviewed and highlight the gaps in current literature with accordance to technological change.
					3 - 4	Student reported on the literature reviewed but there is limited attempt to critically discuss the literature reviewed or to highlight the gaps in the current literature with accordance to technological change.
					0 - 2	Student reported on the literature reviewed but there is no attempt to critically discuss the literature reviewed or to highlight the gaps in the current literature with accordance to technological change.

ILO3	Methodology		2.0		8 - 10	Methodology is completely aligned with objectives, is entirely appropriate for the nature of the project and all its components are described in detail. There is proper evaluation for all assumptions made. Any limitations to the methodology are highlighted and its implications thoroughly discussed. Involves use of engineering principles and research-based knowledge.
					5 - 7	Methodology is aligned with objectives, is considered appropriate for the nature of the project and most of its components are described. There are some attempts at evaluating assumptions made. Any limitations to the methodology are mentioned. Somewhat Involves use of engineering principles and research-based knowledge.
					3 - 4	Methodology is aligned with objectives, is considered appropriate for the nature of the project and most of its components are described. There is no evaluation for any assumptions made. Limitations to the methodology are not highlighted. Involves limited use of engineering principles and research-based knowledge.
					0 - 2	Methodology is only slightly aligned with objectives, marginally appropriate for the nature of the project and most of its components are not described. There is no evaluation for any assumptions made. Limitations to the methodology are not highlighted. No use of engineering principles and research-based knowledge.
ILO1	Application of Knowledge in Science and Engineering		2.0		8 - 10	Clear APPLICATION of knowledge in science and engineering practices to address significant problems arising from technical, engineering or other issues. Clear explanation and justification on chosen approach is provided.
					5 - 7	Some APPLICATION of knowledge in science and engineering practices to address significant problems arising from technical, engineering or other issues. Only marginal explanation and justification is provided on chosen approach.
					3 - 4	Limited Clear APPLICATION of knowledge in science and engineering practices to address significant problems arising from technical, engineering or other issues. No explanation and justification is provided on chosen approach.
					0 - 2	No APPLICATION of knowledge in science and engineering practices to address significant problems arising from technical, engineering or other issues. No explanation and justification is provided on chosen approach.
ILO4	Conclusions & Expected Outcome		1.0		8 - 10	Important and relevant conclusions are clearly stated and all expected outcomes are clearly identifed. Significance of expected outcomes in a range of contexts is clearly stated.
					5 - 7	Relevant conclusions are made and expected outcomes are identified. Significance of expected outcomes in a range of contexts is stated.
					3 - 4	Relevant conclusions are made but expected outcomes are not clear. Significance of expected outcomes in a range of contexts is unclear.
					0 - 2	Conclusions are made but not entirely relevant and expected outcomes are not clear. Significance of expected outcomes in a range of contexts is not stated.
ILO5	Citations/ Reference/ Appendix		0.5		8 - 10	All the used work of other researchers is properly cited and referenced. Only proper sources of information are used (journals, conferences, etc. without non-trustworthy online sources). Mostly up to date references are utilised. All referencing is presented in the proper format. All evidences, attachments, appendices are clearly attached to support items presented in the project report.
					5 - 7	Most of the citations and referencing are presented in proper format. Evidences, attachments, appendices are mostly attached but there are items presented in the project report that does not have supporting documents. No evidence of non-trustworthy online sources.
					3 - 4	The citations and referencing are presented in proper format. No evidence, attachments, appendices are attached. Non-trustworthy online sources were cited.
					0 - 2	The citations and referencing are presented in wrong format. No evidence, attachments, appendices are attached. Non-trustworthy online sources were cited.

ILO4	English		1.0		8 - 10	Written in clear technical English that is free of grammatical, spelling and punctuation mistakes.
					5 - 7	Mostly written in clear technical English and has few grammatical, spelling and punctuation mistakes.
					3 - 4	Written in unclear technical English that has many grammatical, spelling and punctuation mistakes.
					0 - 2	Written in poor technical English that has many grammatical, spelling and punctuation mistakes.
	TOTAL MARK:					

Total mark would be converted to 30%

****Please key into white coloured cells only***

SUMMARY OF LO SCORES %

ILO1		
ILO2		
ILO3		
ILO4		
ILO5		

CONVERTED MARKS (%)

Appendix J-2
Thesis/Project 1 Report Feedback Rubric

Thesis Proposal Feedback Form	
Group No.:	
Project:	
Assessor:	
Assessors:	**Your feedback plays a very important role in student education. Please take time to provide meaningful feedback.**
Writing Style, Format and Structure	Comment on the degree of compliance of report with the style, structure and format of the guidelines. Highlight any non compliance specifically.
Introduction	Comment on how well the project was justified (research background leading to statement of the problem); how well the research questions, objectives, and hypotheses were clearly formulated; scope and contribution to the body of knowledge.
Critical Literature Review	Comment on student's ability to conduct a critical review and gap analysis as well as on the relevance and comprehensiveness of his/her review.
Methodology	Comment on whether methodology is well defined, aligns with objectives, justifies decisions & assumptions made and discussess limitations.
Application of Knowledge in Science and Engineering	Comment on whether report applies knowledge in science and engineering to address significant problems arising from technical, engineering or other issues..
Conclusions & Expected Outcome	Comment on whether relevant and significant work are highlighted and if expected outcome clearly identifie
Citations/ Reference/ Appendix	Comment on the report with regards to proper referencing standards, appropriate sources used, up to date references.
English	Comment on clarity, readability, grammar.

Please key into white coloured cells only

Appendix J-3
Thesis/Project 1 Oral Presentation Form

Oral Presentation Assessment Rubric	
Group No.:	
Project:	
Assessor:	

Oral Presentation Assessment (30%)

1-Very Poor 2-Poor 3-Satisfactory 4-Good 5-Excellent

Preparation of Presentation Material: [25 Marks]		Marks 1 - 5
A	Carefully designed slides to highlight important points.	
B	Sequence of the slides was perfect.	
C	Used suitable images and graphics.	
D	Clear text with right background was used.	
E	Figures were clear and comprehensible.	
	Section Total	

Presentation Performance: [50 Marks]		Marks 1 - 5
A	Presentation confined to the research topic.	
B	Expressed points logically and sequentially.	
C	Highlighted all important points.	
D	Loud and clear voice.	
E	Vary pitch, tone and speed accordingly and used pauses as required.	
F	Eye contact was good and appropriate gesture was used.	
G	Summary of the work was delivered.	
H	Well-rehearsed yet natural.	
I	Kept the attention of the audience.	
J	Perfect time management.	
	Section Total	

Question and Answer: [25 Marks]		Marks 1 - 5
A	Clear understanding of the research topic (self-reliance of the work).	
B	Solid engineering principles and research-based knowledge of the work involved.	
C	Evidence for extensive literature review (sound knowledge of related work).	
D	Able to give brief and concise answers.	
E	Able to apply principles-based approaches to answer questions.	
	Section Total	

	TOTAL MARKS	

Please key into white coloured cells only

SUMMARY OF L %

ILO7		

CONVERTED MARKS (%)

Appendix J-4
Thesis/Project 1 Oral Presentation Feedback Form

Oral Presentation Feedback	
Assessors:	Your feedback play a very important role in student education. Please take time to provide meaningful feedback.
Student:	
Project:	
Assessor:	
Preparation of Presentation Material	**Comment on the slides prepared by the student.**
Presentation Performance	**Comment on the student's presentation skills.**
Question and Answer	**Comment on student's ability to answer questions posed by assessor.**

Please key into white coloured cells only

Appendix J-5
Meeting Record Assessment Rubric

Meeting Record Assessment Rubric		
Group No.:		
Project:		
Adviser:		
Meeting Record Assessment (10%)		
1. Number of Meetings with Supervisor – these are weekly meetings which took place between the student and the supervisor and the relevant meeting record sheet was documented.		
Area 1	**Number of Meetings**	**Total score**
Number of meetings held during the 18 weeks semester period	None	0
	Less than 5	10
	5 to 6	15
	7 to 8	25
	9 to 10	35
	More than 10	40
Area 1 score		
2. Progress Report – Execute and lead research project planning, budget, direct and control tasks, resources effectively (which has been indicated in the meeting record).		
Area 2 score (1 to 5)	**Progress Report**	**Total score**
Average completion of ggreed tasks during the semester	Completed none	0
	Completed at least 25%	20
	Completed at least 50%	30
	Completed at leaset 75%	40
	Completed at least 85%	50
	Completed 100%	60
Area 2 score		

Total score out of 100 (Area 1 + Area 2)	

Other comments

Please key into white coloured cells only

SUMMARY OF LO SCORES **%**

ILO6		

CONVERTED MARKS (%)

Appendix J-6
Peer Assessment Rubric

Project/Thesis Peer Assessment Rubric

Group No.:		**Self**		**Peer 2**	
Project:		**Peer 1**		**Peer 3**	

Particulars		Self					Peer 1					Peer 2					Peer 3				
		1	2	3	4	SCORE	1	2	3	4	SCORE	1	2	3	4	SCORE	1	2	3	4	SCORE
Participation in developing ideas and planning project	25%	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐	
Willingness to discuss the ideas of others	15%	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐	
Cooperation with other group members	20%	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐	
Interest and enthusiasm in project	10%	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐	
Participation in leading/facilitating discussion	10%	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐	
Able to submit the assigned deliverables on time	15%	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐	
Ease and familiarity with discussion material	5%	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐	

Note: 1-No Participation, 2-Not Satisfactory, 3-Satisfactory, 4-Very Satisfactory

Appendix J-7
Thesis/Project 2 Final Report Assessment Rubric

	Project/Thesis 2 Report Marking Rubric					
	Group No.:					
	Project:					
	Assessor:					
	Project/Thesis 2 Thesis/Project Report (35%)					
	Area	**Total Marks**	**Weight-age**	**Actual Marks**	**Scoring Band**	**Criteria**
ILO4	English, Writing Style, Format and Structure		1.0		8 - 10	The report has all the sections presented in a neat and tidy manner as per the thesis guidelines and style. Written in clear technical English that is free of grammatical, spelling and punctuation mistakes.
					5 - 7	The report has most sections presented in a neat and tidy manner as per the thesis guideline. Mostly written in clear technical English and has few grammatical, spelling and punctuation mistakes.
					3 - 4	The report has most sections presented in a messy manner and does not follow the thesis guideline. Written in minimal technical English that has many grammatical, spelling and punctuation mistakes.
					0 - 2	Inadequate sections presented in a messy manner and does not follow the thesis guideline. Written in unclear technical English that has many grammatical, spelling and punctuation mistakes.
ILO 4	Introduction		0.5		8 - 10	Very clear research background, statement of the problem, research questions,objectives, hypotheses, and scope. These clearly address significant problems in technical, engineering or other issues.
					5 - 7	Somewhat clear research background, statement of the problem, research questions, objectives, hypotheses, and scope. These clearly address significant problems in technical, engineering or other issues.
					3 - 4	Somewhat clear research background, statement of the problem, research questions, objectives, hypotheses, and scope. These do not clearly address significant problems in technical, engineering or other issues.
					0 - 2	Unclear research background, statement of the problem, research questions, objectives, hypotheses, and scope. These do not address significant problems in technical, engineering or other issues.
ILO4	Critical Literature Review		1.0		8 - 10	Literature reviewed is comprehensive, relevant and up to date. Clear attempt to critically discuss the literature reviewed, highlight the gaps in current literature and mention the significance to engineering community or body of knowledge in a range of contexts.
					5 - 7	Literature reviewed is relevant and up to date. Limited attempt to critically discuss the literature reviewed and highlight the gaps in current literature.
					3 - 4	Student reported on the literature reviewed. Limited attempt to critically discuss the literature reviewed and highlight the gaps in current literature.
					0 - 2	Student reported on the literature reviewed but there is no attempt to critically discuss the literature reviewed or to highlight the gaps in the current literature.

ILO1	Research Methodology		1.5		8 - 10	Methodology is completely aligned with objectives. Imlementation technique chosen is appropriate for the nature of the project. All components in methodology are described in detail. There is full justification for all decisions taken. There is proper evaluation for all assumptions made. Any limitations to the methodology are highlighted and its implications thoroughly discussed.
					5 - 7	Methodology is completely aligned with objectives. Implementation technique chosen is mostly appropriate for the nature of the project. Most of its components are described. There are some attempts at justification for decisions taken. There are some attempts at evaluating assumptions made. Any limitations to the methodology are mentioned.
					3 - 4	Methodology is aligned with objectives. Implementation techique is marginally appropriate for the nature of the project and most of its components are described. There is no justification for decisions taken. There is no evaluation for any assumptions made. Limitations to the methodology are not highlighted.
					0 - 2	Methodology is only slightly aligned with objectives. Implementation technique is marginally appropriate for the nature of the project and most of its components are not described. There is no justification for decisions taken. There is no evaluation for any assumptions made. Limitations to the methodology are not highlighted.
ILO2	Application of Techniques		0.5		8-10	Clear application of appropriate techniques, resources, modern engineering and IT tools (e.g., Excel, MATLAB, simulation tools, ETAP, ANYSYS, Design of Experiment, etc.) or equlipment for a research-based project.
					5 -7	Some application of appropriate techniques, resources, modern engineering and IT tools or equipment was noticed.
					3 - 4	Minimal application of appropriate techniques, resources, modern IT tools or equipment in the project.
					0 - 2	No clear application of appropriate techniques, resources, modern IT tools or equipment in the project.
ILO5	Project Analysis		0.5		8-10	Research/ results clearly explains the impact towards societal, economical and environmental context. There is proper evaluation of results obtained and corresponding implications toward sustainable development are thoroughly discussed.
					5-7	Some impact of research/ results towards societal, economical and environmental context is noticed. There is minimal evaluation of results obtained and the corresponding implications toward sustainable development are somewhat discussed.
					3 - 4	Limited indication of research/ results that explains the impact towards societal, economical and environmental context. There is no evaluation of results obtained and the corresponding implications toward sustainable development are not discussed.
					0 - 2	Unclear indication of research/ results that explains the impact towards societal, economical and environmental context. There is no evaluation of results obtained and the corresponding implications toward sustainable development are not discussed.
ILO5	Impact on Society		0.5		8-10	Impact of research towards societal, health, safety, legal, economic and cultural issues is clearly demonstrated. These issues are clearly assessed using informed reasoning and contextual knowledge. Direction of research is clearly addressing these issues.
					5-7	Informed reasoning and contextual knowledge on impact towards societal, health, safety, legal, economic and cultural issues is somewhat noticeable. These issues are vaguely assessed using informed reasoning and contextual knowledge. Direction of research is not clearly addressing these issues.
					3 - 4	Informed reseasoning and contextual knowledge on impact towards societal, health, safety, legal, economic and cultural issues is presented. These issues are not assessed using informed reasoning and contextual knowledge. Direction of research is not addressing these issues.
					0 - 2	Informed reseasoning and contextual knowledge on impact towards societal, health, safety, legal, economic and cultural issues is not presented. These issues are not assessed using informed reasoning and contextual knowledge. Direction of research is not addressing these issues.

ILO2	Results and Discussion		2.5		8 - 10	Results are displayed clearly, in an organized manner using appropriate visuals that help highlight key results or findings. Analysis of results is consistent with research questions and objectives. Results are fully interpreted and evaluated using research-based knowledge or research methods which include experiement design, analysis of data and synthesis of information to provide conclusions. Limitations of the results are intelligently discussed. Error analysis is correctly made.
					5 - 7	Results are displayed clearly using appropriate visuals. Analysis of results is consistent with research questions and objectives. There are some attempts to interpret and evaluate results using research-based knowledge or research methods which include experiement design, analysis of data and synthesis of information. Limitations of the results are discussed. Error analysis is attempted.
					3 - 4	Results are displayed but visuals used are not appropriate. Analysis of results is not consistent with research questions and objectives. Results are only presented or described with no attempt to interpret and evaluate them using research-based knowledge or research methods which include experiement design, analysis of data and synthesis of information to provide conclusion. Limitations of the results are not discussed. Error analysis is not attempted.
					0 - 2	Results are displayed but visuals used are not appropriate. Analysis of results is presented. Results are only presented or described with no attempt to interpret and evaluate them using research-based knowledge or research methods which include experiement design, analysis of data and synthesis of information to provide conclusion. Limitations of the results are not discussed. Error analysis is not attempted.
ILO 2	Conclusions and Future Work		1.0		8 - 10	Conclusion fully summarizes research findings, aligns with research objectives, outlines the significance of the work in a range of contexts. Potential future work that arose out of this research work is clearly identified from the attained research-based knowledge.
					5 - 7	Conclusion summarizes research findings, aligns with research objectives and outlines the significance of the work done in a range of contexts. Possible future work from the attained research-based knowledge is identified.
					3 - 4	Conclusion summarizes research findings, aligns with research objectives and outlines the significance of the work done in a range of contexts. Future work is not identified or not relevant.
					0 - 2	Conclusion is not an adequate summary. Future work is not identified or not relevant.
ILO 4	Citations, References/ Appendix		1.0		8 - 10	All work from other researchers is properly cited and referenced. Proper and diverse resources of information are used (journals, conferences, etc. without non-trustworthy online resources). Mostly up to date references are utilised. All referencing is presented in the proper format. All evidences, materials, attachments, appendices are clearly attached to support items presented in the project report.
					5 - 7	Most of the citations and referencing is presented in proper format. Evidences, materials, attachments, appendices are mostly attached but there are items presented in the project report that does not have supporting documents. No evidence of non-trustworthy online sources.
					3 - 4	The citations and referencing is presented in proper format. No evidence, materials, attachments, appendices are attached. Non-trustworthy online sources were cited.
					0 - 2	The citations and referencing is presented in wrong format. No evidence, materials, attachments, appendices are attached. Non-trustworthy online sources were cited.
	Total					

Total mark would be converted to 35%

****Please key into white coloured cells only***

SUMMARY OF LO SCORES		
ILO1		
ILO2		
ILO4		
ILO5		

CONVERTED MARKS (%)

Appendix J-8
Thesis/Project 2 Final Report Feedback Form

Project/Thesis 2 Report Feedback Form	
Group No.:	
Project:	
Assessor:	
Assessors:	**Your feedback plays a very important role in student education. Please take time to provide meaningful feedback.**
English, Writing Style, Format and Structure	Comment on the degree of compliance of report with the style, structure and format of the guidelines. Highlight any non compliance specifically
Introduction	Comment on how well formulated are the research background, scope and objectives as well as how clearly defined is the research question(s) and contribution to the body of knowledge
Critical Literature Review	Comment on student's ability to conduct a critical review and gap analysis as well as on the relevance and comprehensiveness of his/her review
Research Methodology	Comment on whether methodology is well defined, aligns with objectives, justifies decisions & assumptions made and discussess limitations
Application of Techniques	Comment on the application of appropriate techniques, resources, modern engineering and IT tools
Project Analysis	Comment on whether the thesis (directly or indirectly) addresses sustainable development.
Impact on Society	Comment on whether the thesis (directly or indirectly) addresses the impact toward society, health, safety, legal, economic and cultural issues.
Results and Discussion	Comment on the quality of presentation, analysis, interpretation and evaluation of results as well as on the discussion of limitations and relevant error analysis
Conclusions and Future Work	Comment on how well the findings are summarized and aligned to objectives, if significant work is properly highlighted and if the summary ties together the entire report. Comment also on the relevance of
Citations, References/ Appendix	Comment on the report with regards to proper referencing standards, appropriate sources used, up to date references.

Please key into white coloured cells only

Appendix J-9
Thesis/Project 2 Oral Presentation Rubric

	Project/Thesis 2 Oral Defense Marking Rubric					
	Group No.:					
	Project:					
	Assessor:					
	Thesis/Project 2 Oral Defense (30%)					
	Area	**Total Marks**	**Weight-age**	**Actual Marks**	**Scoring Band**	**Criteria**
ILO7	Application of Complex Knowledge		2.5		8 - 10	Consistently applies advanced and principle-based
					5 - 7	Sometimes applies advanced and principle-based
					3 - 4	Limited application of advanced and principle-based
					0 - 2	Does not apply advanced and principle-based knowledge
ILO7	Explanation of Significance		2.5		8 - 10	Able to explain, analyse and evaluate current significance
					5 - 7	Able to explain and analyse significance to the engineering
					3 - 4	Able to explain current contribution to existing knowledge
					0 - 2	Unable to clearly explain significance to the engineering
ILO7	Explanation of Findings		2.5		8 - 10	Able to interpret and analyse findings to provide sound
					5 - 7	Somewhat interprets and analyses findings to provide
					3 - 4	Able to interpret findings to provide relevant conclusions
					0 - 2	Unable to interpret findings to provide sound conclusions
ILO7	Communication		2.5		8 - 10	Communicates clearly and provides insightful answers
					5 - 7	Communicates clearly and provides helpful answers during
					3 - 4	Communicates clearly but provides minimal answers during
					0 - 2	Does not communicate clearly and provides minimal
	Total					

Total mark will be converted to 30%

Please key into white coloured cells only

SUMMARY OF LO SCORES **%**

ILO7		

CONVERTED MARKS (%)

Appendix J-10
Thesis/Project 2 Oral Presentation Rubric

Project/Thesis 2 Oral Defense Feedback Form	
Student:	
Project:	
Assessor:	
Assessors:	**Your feedback plays a very important role in student education. Please take time to provide meaningful feedback.**
Application of Complex Knowledge	Comment on the student's grasp of fundamental and advanced knowledge related to the FYP.
Explanation of Significance	Comment on the student's ability to explain contribution of the FYP to existing body of knowledge.
Explanation of Findings	Comment on the student's ability to explain findings of the FYP and provide sound conclusions.
Communication	Comment on the student's ability to communicate clearly and provide insightful answers during the defense.

Please key into white coloured cells only

Appendix J-11
Thesis/Project 2 Conference Paper Assessment Rubric

Conference Paper Assessment Rubric				
Group No.:				
Paper Title:				
Reviewer:				
Conference Paper Assessment (15%)				
Area	**Actual Marks**	**Scoring Band**	**Criteria**	**Remarks**
Organization of Paper, Grammar, Usage of Language, and Spelling		5	Information is well organized with well-constructed paragraphs and subheadings. There are no errors. Word choice is precise and appropriate.	
		3 - 4	Information is organized with well-constructed paragraphs. Few errors in grammar, usage mechanics and/or word choice.	
		1 - 2	Information is not well organized and paragraphs are not well-constructed. Numerous errors in grammar, usage mechanics and/or word choice.	
Objectives		8 - 10	Objectives are clear and realistic.	
		5 - 7	Objectives are clear.	
		1 - 4	Objectives are unclear and unrealistic.	
Theorectical Framework		16 - 20	Theoretical framework is clearly defined, connected to the paper content, and is used throughout the paper to guide the reader.	
		10 - 15	Theoretical framework is clear and its connection to the paper content is defined.	
		1 - 9	Mention of theories, but unclear how they relate to paper content.	
Methodology and Data		16 - 20	Methodology and data are clearly defined. The methodology is justified. Data and analysis described in a format that can be replicated by others. All data is analysed and discussed.	
		10 - 15	Some methodology and data are described. Some of the methodology is justified. Some data is analysed and discussed.	
		1 - 9	Methodology used has little justification and unclear description. Data analysis and discussion is highly limited.	
Reported Outcomes		16 - 20	The research or assessment is presented in a clear and concise manner. Benchmarks, success indicators and outcomes are clearly defined.	
		10 - 15	Outcomes are quantifiable and research or assessment is included.	
		1 - 9	Outcomes are reported but not substantiated by research.	
Educational or Field Significance		12 - 15	Significance of results clearly articulated, paper covers new territory and could have important impact on the field.	
		8 - 11	Significance of results discussed and work covers new territory.	
		1 - 7	Significance of results discussed but work seems to be re-hashing of prior work.	

Appendix J-12
Thesis/Project 2 Meeting Record Assessment Rubric

Project/Thesis 2 Logbook Rubric		
Group No.:		
Project:		
Adviser:		
Logbook Assessment (10%)		
1. Number of Meetings with Supervisor – these are weekly meetings which took place between the student and the supervisor and the relevant meeting record sheet was documented.		
Area 1	**Number of Meetings**	**Total score**
Number of meetings held during the 18 weeks semester period	None	0
	Less than 5	10
	5 to 6	15
	7 to 8	25
	9 to 10	35
	More than 10	40
Area 1 score		
2. Progress Report – Execute and lead research project planning, budget, direct and control tasks, resources effectively (which has been indicated in the meeting record).		
Area 2 score (1 to 5)	**Progress Report**	**Total score**
Average completion of ggreed tasks during the semester	Completed none	0
	Completed at least 25%	20
	Completed at least 50%	30
	Completed at leaset 75%	40
	Completed at least 85%	50
	Completed 100%	60
Area 2 score		

Total score out of 100 (Area 1 + Area 2)	

Other comments

Please key into white coloured cells only

SUMMARY OF LO SCORES		**%**
LO7		

CONVERTED MARKS (%)

Appendix K
Writing Format of a Thesis/Project Report

The project/thesis report should be typed, double-spaced on standard-sized paper (8.5" x 11") with 1" margins on all sides. You should use a clear font that is highly readable. It is recommended to use 12 pt font, Times New Roman. Others may use 11 pt. Arial font but it should be consistent all throughout the study. A complete template that serves as your reference will be provided for your further reference. Nevertheless, the following information specifies the report writing guideline that must be observed in all project/thesis documentation for purpose of consistency.

Page Header

Indicated in the header (for chapters 1 to 5 only except on the first page for each chapter) is the chapter number and its title, e.g., authors' name. Should be italicized and in 11 pt font Times New Roman or 10 pt font Arial.

A. Sections and Contents

The following sections will provide direction and reference as to the appropriate content guideline in writing the research report.

A.1 Preliminaries

Blank Sheet. This serves as the flyleaf.

Title Page. This page contains the title of the research, name of proponents and statement regarding the requirement for which the research is submitted. It also contains the name of the institution, to which the research is being submitted, and the month and year of submission. (See Attachments)

Approval Sheet. This page bears the name of the proponent/s and the title of the research, together with the signatures of the adviser, the chairman and members of the oral defense panel. This page certifies that the research has been duly approved by the College Dean, and must bear the date of approval. (See Attachments)

Acknowledgement. Your abstract page should include the page header. This section recognizes persons and organizations who/which assisted the proponents in the completion of the research. Acknowledgements should be expressed simply and tactfully.

Dedication Page. Your abstract page should include the page header. This page is optional. If used, make it brief and centered in one page. No heading is necessary.

Abstract. The abstract page should include the page header. It should contain at least your research topic, research questions, participants, methods, tools and technologies, results, data analysis and interpretation, and conclusions. You may also include possible implications of the research and future work you see connected with your findings. Your abstract should be a single paragraph double-spaced. Your abstract should be between 200 and 300 words.

You may also want to list keywords from your paper in your abstract. To do this, indent as you would if you were starting a new paragraph, type Keywords: (italicized), and then list your keywords. Listing your keywords will help researchers find your work in databases

Normally the abstract should not include any reference to the literature.

Table of Contents. A sequential listing of all major parts of the research with corresponding page numbers. Included in the table of contents are titles of chapters, sections and subsections, bibliography and appendices. Also included are titles of the preliminary pages as well as the required forms.

B. Main Body of the Research/Project

The main body of the research /project study document is divided into chapters, sections, and sub-

sections. The chapter's title and contents (subtopics for each program will depend on the field/area of study and typeof research/project/feasibility study). However, all must have at least the following:

- Introduction
- Literature Review
- Research Methods
- Results and Discussions
- Summary Findings
- Conclusions
- Recommendations

C. References and/or Bibliography

References. An alphabetical detailed list of sources that have been cited within the text.

Bibliography. A list of all references consulted in preparing the document,whether cited or not.
Categorize bibliography as published and unpublished. Under published materials are references from and sub-categorized as books, encyclopedia, dictionary, magazines, newspapers, journals, electronic downloads and under unpublished materials are thesis and dissertations.
The list of references is arranged alphabetically and single-spaced, but separated by blank line. Type the first line of an entry from the left but indent the succeeding lines by five letter spaces.

D. Appendices
An appendix or appendices, if any, should be after the References andor/ Bibliography. Appendices include original data, preliminary tests, tabulations, questionnaires, tables that contain data of lesser importance, very lengthy quotations, forms and documents, computer printouts and other pertinent documents such as transcript of interview (if interview was used) among others. Appendices should be arranged chronologically as they are cited in the main text. Use capital letters of the English alphabet to track appendices.
A single appendix is labeled "APPENDIX" on the contents page, with orwithout a title. (If using a title, it should be written as "APPENDIX: TITLE") The first page of the appendix itself is labeled by the word "APPENDIX" (centered) and a title capitalized and centered after a skip line.Several appendices are labeled "APPENDICES" on the contents page, with subsequent lines each containing n indented alphabetic identifier and titlesuch as "A: SURVEY QUESTIONNAIRE"; other lines (labeled B, C etc.) followas needed. . The appendices proper are then each labeled as "APPENDIX A" (centered) followed after a skip line by the title centered and capitalized.Appendix pages should be numbered as continuation of the text.

E. Referencing and Citation Style
This guide recommends using Harvard style and guidelines.

F. Writing Guidelines

Text

- The general text shall be encoded using any word processing softwaresuch as Microsoft Word or OpenOffice Writer, using either Arial 11 orTimes New Roman 12.
- All symbols shall be from an acceptable font. Text in figures and in tables must be readable, and the font size shall not be smaller than 9 point.
- Text should be justified on both sides.
- All signatures on the approval page must be original and signed usingsign (ink) pen. The document must be signed by the Chairman of the Panel, the panelist, the Adviser, the College Dean.
- Corrections: The following should be strictly observed.
  - ✓ Strikeovers, interlineations or crossing-out of letters or words areunacceptable.
  - ✓ No erasures.
  - ✓ The use of liquid paper and of transparent tape for patching is notacceptable in any form.

- Materials must be printed on one side of the paper only.

Spacing, Paragraphing and Indentions

- The general text of the manuscript shall be double spaced.
- Single-space should be used in tables with more than ten (10) rows, quotations with more than ten (10), line captions with more than 2 lines and bibliographic entries.
- Paragraph indentions shall be five (5) spaces.

Page Numbering and Margins

- The preliminary pages are numbered in consecutive lower case Roman numerals in the upper right-hand corner.
- The text and all reference pages, including the Appendices, are numbered consecutively in Arabic numbers, beginning with 1 on the first page of the text.
- Number all pages consecutively throughout the paper in the upper right
- -hand corner, ½ inch from the top and flush with the right margin.
- Every page on which any typing or drawing appears has a number.
- Inserted pages numbered 10a, 10b, 10c, etc., are not acceptable.
- The position of the page number should not be altered by horizontal or vertical placement of the Table or Figure.
- For every page, the left margin should be four (4) centimeters or 1 ½ inches. Margins on other sides shall be two and a half centimeters or one inch. Margin specifications are meant to facilitate binding and trimming. All information including page numbers should be within the text area. The margin regulations must be met on all pages used in the thesis/project document including pages with figures, tables, or illustrations.

Tables and Figures

The purpose of tables and figures in documents is to enhance your readers' understanding of the information in the document. Most word processing software available today will allow you to create your own tables and figures, and even the most basic of word processors permit the embedding of images, thus enabling you to include tables and figures in almost any document.

"Table" is a tool generally used to designate tabulated numerical data or text in the body of the document and in the Appendices. "Figure" is generally used to designate other non-verbal material (such as graph or illustrations) included in the body of the document and in the Appendices.

Number all tables sequentially as you refer to them in the text (Table 1, Table 2, etc.), likewise for figures (Figure 1, Figure 2, etc.). Abbreviations, terminology, probability level values must be consistent across tables and figures in the same article. Likewise, formats, titles, and headings must be consistent. Do not repeat the same data in different tables.

Data in a table that would require only two or fewer columns and rows should be presented in the text. More complex data is better presented in tabular format. In order for quantitative data to be presented clearly and efficiently, it must be arranged logically, e.g. data to be compared must be presented next to one another (before/after, young/old, male/female, etc.), and statistical information (means, standard deviations, N values) must be presented in separate parts of the table. If possible, use canonical forms (such as ANOVA, regression, or correlation) to communicate your data effectively.

Like the title of the paper itself, each table must have a clear and concise title. When appropriate, you may use the title to explain an abbreviation parenthetically. Keep headings clear and brief. The heading should not be much wider than the widest entry in the column. Use of standard abbreviations can aid in achieving that goal. All columns must have headings, even the stub column, which customarily lists the major independent variables.

In reporting the data, consistency is key: Numerals should be expressed to a consistent number of decimal places that is determined by the precision of measurement. Never change the unit of measurement or the number of decimal places in the same column.

Preparation of Tables

- Every table should be given a number and should be cited in the text bythat number, either directly or

parenthetically.

- Numeration of tables should be chronologically continues through thetext or the whole book. Arabic numerals are used.
- The title or caption set above the body of the table should identify thetable briefly.
- Give each row and column a heading so the reader knows to what it refers.
- A table may be placed sideways (landscape) on the page. Place the table caption sideways also so that all parts can be conveniently read together.
- The first letter of a variable/factor inside the table should be capitalized.
- Legend should be placed below the table where the symbol or acronymwas first used, in ten (10) point font size, italicized and single-spaced.
- Symbols should be used for level of significance.

Preparation of Figures

- Numeration of figures should be chronologically continued throughoutthe text or whole book. Arabic numerals are used.
- Title or caption is set below the figure.
- Define abbreviations and symbols used in each figure
- All figures must be placed immediately after the page where aparticular figure number is mentioned.
- All figures must be well explained in the text.
- The word "Figure" should be spelled out.
- A period follows after the number of the figure.
- Figures should be oriented vertically whenever possible.
- Photographic illustrations to be used in the document must withoriginal photographs or high quality reproductions.

Placement

- All tables and figures are placed either at the top or bottom portion ofthe page.
- Tables, figures, and plates must first be introduced in textual form before its presentation.
- The location on the page, in regards to the table or figure, in which youplace each label must be the same location for every table or figure.
- The page on which the table/figure appears is numbered consecutivelywith the main text. This page number is used in the List of Tables or Listof Figures.
- If a table or figure is on more than one page, the first page is the one listed on the List of Tables or the List of Figures.

G. Printing and Distribution

Paper and Ink

- The paper required must conform to the following requirements:

Color:	White
Size:	8 ½ by 11 inches
Substance:	20 or higher gsm

- Printing must be done in ink jet or laser printers.
- Text, tables and figures must be printed in black ink only. Use line typessymbols, shading, and patterns to distinguish between data. If color isessential to the content, all copies must contain original color presentations printed in the highest quality, permanent ink, or presented as photographic prints.
- Duplication Processes and Materials. All computer typing must be of letter quality. The letters must be appearing fully formed and the fonttype must be legible and unambiguous.

H. Binding

- Two (2) original hard bound copies are required for submission to thefollowing: College/Campus Research Office and Library but the department and adviser may also request for a copy of the study.

- The color of the hard bound cover of the research/project documentfor all programs in the College is maroon.
- All letters in the cover shall be in gold, font 14 using Bookman Old Style
- Cover - Hard cover must be bound in maroon cloth and embossed in gold, and should contain the title of the thesis, and full name of the student. Thesis title should appear two inches from top of the page. Student's full name should appear two inches from the bottom of thepage.
- Spine - The spine is stamped in gold as follows:

EXAMPLE

Name | Thesis Title | Degree | Year*

* Year in which degree was conferred.

- If the bulk of the document necessitates two or more binders, the separation into volumes should come at the end of major divisions of the document. The title page is repeated in each volume and all are identical, except for the words "Volume I" and "Volume II", etc., just below the title. The title pages of Volumes I, II, III, etc., are neither counted nor numbered. All other preliminaries are in Volume I. In numbering the text and the pages of Reference Material, numbering is continuous from Volume I to the end of the last Volume.

I. Journal Paper and One-page Abstract Guidelines

The college also requires that each research/project document be submitted along with a journal type paper of not more than ten pages. Thisshall be the document format to be submitted to Annual Student Forum, publications, and research competitions. Two (2) hard copies will be required to be submitted to the College/Campus Research Office and Adviser. Soft copy willalso be submitted to the College/Campus Research Office thru electronic mail.

J. Submission to Turnitin Software

All research or project reports and documentation are required to be submitted to the Turnitin software, a licensed anti-plagiarism tool widely used in the university, to ensure that scholarly works of the members of the institution are held to the highest standards and maintained at a high level of dignity. The instructor assigned in the research course shall be responsible for uploading to Turnitin. For members of the institution are held to the highest standards and maintained at a high level of dignity. The instructor assigned in the research course shall be responsible for the whole submission process using the software. Turnitin result will be required to be submitted in the College/ Campus Research Office.

The copy of the Thesis/Project report should include a similarity index report (plagiarism check). Please take note that the overall ***similarity index*** *shall not exceed* ***30%*** *and each reference should have similarity index of not more than* ***5%****.*

K. Hardcopy Submission Requirements

The following shall be distributed accordingly:

College Library -	1 HB copy of full paper
College Research office -	1 HB copy of full paper, Journal Paper (Soft and hard copies), One page Abstract(Soft and hard copies), Turnitin Result(Soft and Hard Copies)
Adviser-	1 HB (optional) and CD copy of full paper, Journal Paper (See Attachment for guide- lines) , One page Abstract
Department -	1 HB (optional) and CD copy of full paper,manual, pamphlet, brochure (if applicable)

All copies should be submitted not later than two (2) days before the meeting of the Academic Council. A copy of the approval sheet shall be given to the university registrar not later than one day before the college deliberation

L. Oral Defense Schedule

The course instructor/professor shall be responsible for the schedule arrangements of researches/projects that have satisfied the requirements for oral presentation. These include a recommendation by the research/ project adviser, four copies of document, confirmation slip of members ofthe panel, and approved request slips for equipment and materials requiredduring presentation if there are any.

Copies of the document shall be given to the members of the panel atleast two (2) days before the approved schedule of oral presentation. Presenters must wear decent clothes, preferably complete uniform or corporate attire. They shall be in the venue at least an hour before the startof the defense.

M. Research/Project Assessment

Students will be provided a copy of the written and oral presentation rubrics that will be used during the defense. (Appendix J.1 to J.12) Distribution of marks are those indicated in the course syllabus.

REFERENCES:

DOST. 2017. "Harmonized National Research and Development Agenda 2017-2022." Department of Science and Technology.

Moody, Josh. 2019. "Why Undergraduate Research Matters in College | Best Colleges | US News." US News & World Report. 2019. //www.usnews.com/education/best-colleges/articles/2019-09-20/why-undergraduate-research-matters-in-college.

Petrella, John K., and Alan P. Jung. 2008. "Undergraduate Research: Importance, Benefits, and Challenges." *International Journal of Exercise Science* 1 (3): 91.

Appendix L
Journal/Conference Paper Format

Author Guidelines for 10-page Summary of StudentTheses/Researches

Tirso A. Ronquillo*, Kwansun Hideki**
* *Department of Electronics Engineering, Batangas State University*
** *Division of Electronics and Computer Science, Osaka Prefecture University, Japan*
E-mail: taronquillo@yahoo.com, kwansun@prefecture.ac.jp

Abstract

The abstract should summarize the contents of the paper and should contain at least 120 and at most 200 words. It should be set in fully-justified Times 10-pointfont size at the top of the left-hand column below the author information. There should be two blank (10-point) lines after the abstract. The title word "Abstract" should be in 12-point Times, boldface type, centered relative to the column, initially capitalized.

1. Introduction

These guidelines include complete descriptions of the fonts, spacing, and relatedinformation for producing your research summary and formatted as such. The paper should generally contain: Introduction; Objectives; Materials and Methods; Results and Discussion; Conclusions; Recommendations; and References

2. Paper Preparation

All manuscripts must be in English. All text must be in a two-column format and fully justified. Do not write or print anything outside the print area defined in these guidelines. Each manuscript is limited to a maximum length of 10 pages (8" x 11") including figures, tables, tables, and references. Margins should be set to (1.5", 1", 1", 1")

2.1 Paper Title and Author Information

The main title should be written on the top of the first page, centered, and in Times 14-point, boldface type. Capitalize the first letter of nouns, pronouns, verbs, adjectives, and adverbs; do not capitalize articles, coordinate conjunctions, or prepositions (unless the title begins with such a word). Leave one blank lines after the title.

Author names and affiliations are to be centered beneath the title and printed in Times 11-point, non-boldface type. Multiple authors may be shown in a two- or three-column format, with their affiliations italicized and centered below their respective names. Include e-mail addresses if possible. Author information should be followed by two 11-point blank lines.

2.2 Type-Style and Font

Whenever Times is specified, Times Roman or New Times Roman may be used. Ifneither is available on your word processor, please use the font closest in appearance to Times that you have access to. Please avoid using bit-mapped fontsif possible.

2.3 Main Text

For the main text, please use fully justified 11-point Times type and single-line spacing. Italic type may be used to emphasize words in running text.

The first paragraph in each section should not be indented, but all following paragraphs within the section should be indented as these paragraphs demonstrate. Please do not place any additional blank lines between paragraphs.

2.4Figures and Tables

Figure and table captions should be 10-point Arial font, boldface. Callouts should be also 10-point Helvetica, boldface. Initially capitalize only the first word of each figure caption and table title. Figure captions are to be below the figures as in Figures 1 and 2. Leave a single-spacing of 12-points after the figure captions. Table titles are to be above the tables as in Table 1.

Figure 1: Example of a figure with caption. Captions should be set in 9-point boldfaceHelvetica or Arial.

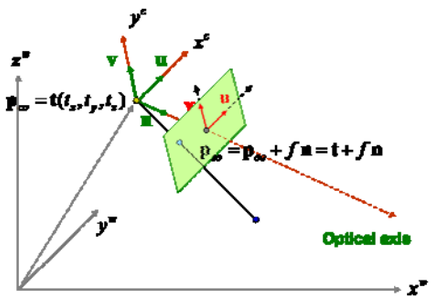

Figure 2: Short captions should be centered.

2.5 Headings

Headings should be capitalized (i.e., nouns, verbs, and all other words except articles, prepositions, and conjunctions should be set with an initial capital) and should, with the exception of the title, be aligned to the left. Words joined by a hyphen are subject to a special rule. If the first word can stand alone, the second word should be capitalized (e.g. Font-Style, First-Order). Otherwise, the second word should not be (e.g. Pre-scanning, Post- processing). The font sizes are given in Table 1.

Table 1: Formats of headings

Heading level	Font	Example
Title:centered	14pt bold	**New Algorithm**
1st-order	12pt bold	**1. Introduction**
2nd order	11pt bold	**2.1 Classification**
3rd order	10pt bold	**3.1.1 Data Set.**

Except third level heading which we discourage to use, headings should be initially capitalized, flush left, with one blank line before, and one after.

2.5.1 Third-Order Headings. Third-order headings use boldface, initiallycapitalized, flush left, and proceeded by one blank line, followed by a period and your text on the same line.

2.6 Footnotes. Use footnotes sparingly (or not at all!) and place them at the bottom of the column on the page on which they are referenced. Use Times 8-point type, single-spaced.

2.7 Illustrations, Graphs, and Photographs. All graphics should be center-justified and accompanied with a self- contained caption. Please ensure that any point you wish to make is resolvable in a printed copy of the paper. Resize fonts in figures to match the font in the body text, and choose line widths which render effectively in print. Many readers (and reviewers), even of an electronic copy, will choose to print your paper in order to read it.

2.8 Equations. Equations should be written using Equation Editor as shown below and referenced using 'Cross-reference', as shown in Eq. (1).

$$F(u) = \int_{-\infty}^{\infty} f(x) e^{-j2\pi ux} dx \qquad (1)$$

3. Conclusions

The Conclusions section should be the last numbered section of the paper, followed by the Acknowledgements section (if applicable) and the reference list.

Acknowledgements This work was supported by the Japan Research Foundation Grant funded by the Japanese Government.

4. References

List and number all bibliographical references in 10-point Times, single-spaced, atthe end of your paper. When referenced in the text, enclose the citation numberin square brackets, for example [1]. Where appropriate, include the name(s) ofeditors of referenced books.

[1] G.D. Hong and K.S. Yoo, *"Multimedia Database Management – Requirements and Is-sues,"* IEEE multimedia,

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[2] G.J. Lim, G.D. Hong, and M.H. Kim, *Multimedia and Imaging Databases, Morgan Kauf-mann Publishers*, San Francisco, Calif., 2005
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[4] P. MacKenzie. The *PAK Suite: Protocols for Password- Authenticated Key Exchange.* BellLaboratories, Lucent Technologies, Muray Hill, NJ 07974 USA, April 24, 2004.

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Notes:
Almost always, there is no section devoted for the literature review in all re- search papers in a journal. It is suggested that you discuss in the Introduction some related concepts, research findings and parallel studies done by other researchers in your field of interest while carefully acknowledging those authors in your references.