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DEPARTMENT OF CIVIL ENGINEERING
GENERAL PHILOSOPHY AND OBJECTIVES OF THE COLLEGE/DEPARTMENT

General Philosophy and Objectives

The general philosophy in the with the minimum academic standards set by the COREN is to produce graduates with high academic standard with adequate practical background and of immediate value to industry and the nation in general; and be self-employable. The programme has four-intervening Industrial-Training periods to enable the engineering graduates acquire the necessary skills to solve local programs. Pursuant to the general philosophy, therefore, the programmes have been designed to incorporate the following features:

(a) Common courses at the 100 and 200 levels for all engineering students.
(b) 8 weeks industrial training workshop practical at the end of the 2nd semester 100 level examinations for all engineering students.
(c) Workshop practical (up to 300 level) and, laboratory work for all engineering students.
(d) Interaction between students and professionals through regular seminars.
(e) Final year research project where the student works alone under an academic supervisor.
(f) Opportunity to have in-depth study of a specific area of the programme from a wide selection of optional courses.
(g) Adequate knowledge in engineering management and entrepreneurship.

Goals and Objectives:

The general goals and objectives of engineering training are expected to be in consonance with the realization of national desires with respect to industrial development and high technology attainment. Consequently, the objectives of the engineering programmer are to:

(a) Develop the necessary skills, creative ability, attitudes and expertise consistent with engineering design, communication and construction of engineering works and projects;
(b) Adapt and improve on exogenous technology in order to enhance construction techniques and the proper study and use of local raw materials;
(c) Inculcate maintenance culture in the use of engineering artifacts;

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(d) Inculcate a responsible attitude towards demands made by the practice of engineering and risk implication of design and construction;
(e) Install and maintain complex engineering systems to enable them perform optimally in the Nigerian environment;
(f) To able to exercise original thought, have good professional judgement and be able to take responsibility for the direction of important assignments;
(g) Be self employable, and,
(h) Ensure therefore, that engineering graduates from IU are resourceful, creative, knowledgeable and capable of carrying out the following functions:

- to design engineering projects and supervise their construction;
- to design components of Civil Engineering Systems and Works – Structures, Water Resources Systems, Highways, Transportation, etc.;
- to design materials mix proportions (quality control) to get a high standards works;

To be good manager of people, money, material, plants and projects. The general goals and objectives of engineering training are expected to be in consonance with the realization of national desires with respect to industrial development and high technology attainment. Consequently, the objectives of the engineering programmes are too:

Departmental Vision

The departmental mission is to develop into a national resource that will continue to support the development of Nigeria, its economic diversification to make it responsive to the needs of government, industry and society. Thus, the department will provide:

- State-of the – art technological and engineering training that prepares the graduates for responsibilities of the workplace.
- To produce qualified and competent Civil Engineers in such areas of specialization as – Structural Engineering, Water Resources Engineering, Highways and Transportation Engineering, Foundation/Geotechnical Engineering Construction Management, etc.
- Engage in appropriate research activities, and, hence, produce the most sought-after engineers by all employers of labour, post graduate schools and research institutes.
- Establish industry-institution linkages for mutually beneficial relationships.

- Strive to become a Centre of Excellence in Engineering and Technology in the West-African sub-region where expertise and facilities to accelerate the pace of industrial development can be provided.

The dream of the department is to become one of the best Civil Engineering Departments in any Nigeria University with national and international acclaim. A department where the advancement of engineering and technology is continuously dynamic. Its graduate will become very capable and environmental-friendly engineers who would be very relevant in the public and private sectors of the economy and rapid industrialization and development of Nigeria.

College Vision

The vision of the College is to be the best Engineering College in any Nigerian and Offshore University with national and international acclaim; a college where the advancement of engineering and technology is continuously dynamic, environment-friendly engineers, required in the public and private sectors of the economy are prepared for the rapid industrialization and development of the global community.

Registration:

At the beginning of every session all students are to register for all their courses for that session using online registration as required by the University's Examinations and Records Unit of the Registry. The must register for a minimum of 18 credits per semester and 36 credits per session. The maximum number of credits or a session must, however, not exceed 52 credits.

Course Adviser:

Each Head of Department appoints academic staff as course adviser to the students for the different level of study, with the primary responsibility of ensuring that the students register for the courses and credits as is required, and advising them on University regulations as they relate to their studentship.

Industrial Training:

Engineering education is incomplete without industrial attachment being part of the degree programme. The NC recommends a minimum duration of 40 weeks (one Semester

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and 3 long vocations) for industrial attachment. The objective of the attachments cannot be over emphasized. It is expose the students to a live working environment where they can relate theory to practice and enhance their communication and human relation skill. Priority is given to those engineering concerns in which maintenance and workshop practice plays a major role because they offer practical exposure that may be available in the Colleges. From the aforementioned, the following practical training scheme: IU Industrial Training Scheme, (IUITS), is carried out by the college:

(i) **Pre-degree IUITS 102**

This is an intensive eight-week in house practical training in the various workshops within the College and around the campus. It commences two weeks after the end of the 100 level Session Examinations for 100 level Engineering students. During this period, the students are exposed to workshop practices that may be encountered in the mechanical, machine, sheet metal, automobile, welding, carpentry, civil and electrical engineering workshops.

(ii) First Industrial Attachment (200 level IUITS)-IUITS 202

This takes place in the long vacation after the end of the 200 level Session examinations, in relevant industries for a period of 12 weeks, with supervisory visits by college staff.

(iii) **Second Industrial Attachment (300 Level IUITS) –IUITS 302**

The attachment takes place at the end of the 300 level session examination for 12 weeks of the long vacation. Again, College staffs are exposed to visit the trainees for on-the-spot assessment of their progress

Third Industrial Attachment (400 Level IUITS) –IUITS 402

The attachment, which begins at the end of the first semester examinations, at the 400 level of the programme, is the final exposure to industrial practice before the completion of the Bachelor of Engineering degree program. It last for 24 weeks. It is expected that during the training, the student is exposed to his/her chosen end Degree.

(i) **Grading and Assessment of Industrial Training**

This should be a combination of Continuous Assessment (CA) by the supervising college staff that visit the students on training, and the grading of the logbooks and final written reports each student at the end of each training attachment. The designated officer of the establishment must properly authenticate such logbooks and reports where the students served.

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Each week of Industrial Training is assigned one (1) credit. Consequently the totality of Industrial Training amounts of 56 credits. For student to graduate, such a student must have satisfied 42 IUITS credits and obtained a minimum of 50% in the logbook and final written report.

Continuous Assessment (CA) system of the Civil Engineering Department

S/No.	Components	Allocated Marks %
1	Class Attendance	5%
2	Assignment	10%
3	Tests	15%
	Total CA	30%
4	Examination	70%
	Total Marks	100%

In addition, attendance (physical presence) of the student at lectures is very importance, and class register is strictly kept as well as checked by the University Authority before the semester examination. A student must have attendance score of 75% to become eligible to sit for and write semester examinations. Typical examination questions and model solution/marking schemes are appended of attached at the end of the COREN Self Study form.

Graduation Requirement

For a student to qualify for graduation from any of the programmes, such a student must have passed all the prescribed courses in addition to satisfactorily meeting the Industrial Training requirements, and all General studies courses of the University. Such a student must have also met the minimum number of years and not exceeded the maximum number of years required for graduation. Shown in Table 1

Table 1: Minimum and Maximum No of years Required for Graduation

Level of entry	Minimum number of years to graduate	Maximum number of years to graduate
100 level 200 level 300 level	5 4 3	7 6 5

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The class of the Bachelor of Engineering Degree is determined by the final cumulative grade point average earned by the graduating student.

Cumulative Grade Point Average (CGPA)
The CGPA for each level of course is calculated from a combination of the grade GP assigned to percentage scored obtained in the examination and the credit assigned to that course. The relationship is aptly displayed in Table 2.

Table 2: Calculation of GPA

Courses attempted (a)	Credits attempted (b)	% Scores (c)	Letter grades (d)	Grade point (e)	Grade point credit weighed (f) =b)x(e)	Cumulative grade point average (GPA) (g) =∑(f)/ ∑(b)
CHE 211 CHE 221 MEE 231 CHE 241 CHE 251 CE 261	3 3 4 2 3 4	70-100% 60-69% 50-59% 45-49% 40-44 0-39%	A B C D E F	5 4 3 2 1 0	3x5=15 3x4=12 4x3=12 2x2=4 3x1=3 4x0=4	46 =2.42 19
Total	19			Total	46	

Thus, the student who attempted the 200 level courses shown in Table 2, sat for the total 19 credits, and ended up with a GPA of 2.42 for that level. This mode of computation is done for each level per student. The cumulative grade points average, CGPA on which the classification of a graduating student is based, is the sum of the GPA's for each level divided by 5 for a 5- year programme, or 4 for a 4-year program presented in Table 3 below.

Table 3: CGPA for a Graduating Student Mr. XYZ

Mat No.	Name of Student	Level	GPA	CGPA
ENG9900020	Mr. XYZ	100 200 300 400 500	2.12 2.42 3.10 3.50 2.90	14.04 = 2.81 5
		5	14.04	

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The degree classification, according to the CGPA recommended by the NUC is presented in Table 4

TABLE 4: DEGREE CLASSIFICATION

	Class of Degree
4.50 – 5.00	First Class
3.50 – 4.49	2nd Class Upper Division
2.40 – 3.49	2nd Class Lower Division
1.50 – 2.39	3rd Class Upper Division
1.00 – 1.49	Pass

Thus, the candidate, Mr XYZ who finished up with a CGPA of 2.81 has earned a 2nd Class Lower Degree.

ADMISSION REQUIREMENTS

i) Direct Entry Requirement:
Two A' level passes in Physics and mathematics and an additional subsidiary subject. Candidates are expected to possess five credits including English Language, Mathematics, Physics, Chemistry and any other relevant science subject at O'level and A'level must be obtained at not more than two sittings; or

ii) A national Diploma certificate from approved universities or colleges of technologies or Polytechnics with a grade not lower than Merit. In addition, the applicant must possess five credits a O'level.

iii) Any other relevant credential approved by the Senate of the University.

Five O' level credits including English Language, Mathematics, Physics, Chemistry and any other relevant science subjects.

Programme/Sub-discipline/Discipline Structure to include period of formal studies in the University. Industrial training planned visit and projects.

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B.Eng. **(Civil Engineering)** – 5 years.
By Direct Entry:
National Diploma (ND) 4 years.
Higher National Diploma (HND) 3 years.

ACADEMIC CURRICULUM CONTENTS
Objectives:

(a) To provide a highly motivated academic environment that fosters the academically minded to pursue further studies and research in Civil Engineering.
(b) To develop manpower for the country.
(c) To contribute to the supply of sound and competent academic/professional engineers for both Guyana and the Industries.

Introduction to Courses Offered

Engineering is the application of principles of fundamental sciences, engineering, economics, computer technology, and human relations to practical situations i fields dealing with processes and equipment in which matter is treated to produce something that is beneficiary to society. Training in engineering requires the provision of knowledge, skill and understanding of these principles, for the planning, optimum design, construction, operations of new processes with due consideration to the environment, expansion and or revision of existing ones and assessment of performance and equipment. It is on this premise that the program has been structured.

100 level and 200 Levels: Engineering students take common course at 100 and 200 levels with their counterparts in order Departments of the College with very minor exceptions at the 200 level.

300, 400, 500 Levels: At these levels, the students take some Core Engineering courses in their respective departments in addition to relevant courses offered by the College. The detailed course structure is as presented in various sections below.

Course Coding: It is proposed that all courses be coded according to Department, level and semester. Thus, the Department codes are as follows:

Chemical Engineering	-	CHE
Civil Engineering	-	CVE

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Computer Engineering	-	CPE
Electrical/electronic Engineering	-	EEE
Mechanical Engineering	-	MEE
Petroleum Engineering	-	PET
Engineering and Management	-	GRE
Entrepreneurial Studies	-	ESP
University General Studies	-	GST

The level codes are as follows:

100 level	-	1
200 level	-	2
300 level	-	3
400 level	-	4
500 level	-	5

Semester codes are as follow:

First Semester	-	1 or any odd number
Second Semester	-	2 or any even number

For example the full course code for a 200 level course, offered by Chemical Engineering in the first semester, is of the form: CVE 241 where, 2 represents the level, 4 the number assigned by the Department to track the course, and 1 represents the semester. Should the same course be available in the second semester, the course code would be CVE 242 where the '2' at the end of the figure signifies the second semester.

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100 LEVEL COURSE STRUCTURE:

1ST SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNIT	Pre-Requisites
			L	T	P		
	MTH 111	Algebra & Trigonometry	2	1	-	3	
	MTH 112	Calculus/Real Analyses	2	1	-	3	
	CHM 111	General Chemistry 1	2	1	-	3	
	CHM 112	Organic Chemistry 1	2	-	-	2	
	PHY 111	Mechanics and properties matter	1	1	-	2	
	PHY 112	General Physics	1	1	-	2	
	PHY 113	Thermal Physics 1	1	1	-	2	
	GST 111	Communication in English 1	2	-	-	2	
	GST 112	Logic, Philosophy and Human Existence	2	-	-	2	
	GST 113	St. Vincent History and Culture	2	-	-	2	
		Total Credit Units				**21**	

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100 LEVEL COURSE STRUCTURE:

2ND SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNIT	Pre-Requisites
			L	T	P		
	MTH 121	Vectors, Geometry/Statistics	2	1	-	3	
	MTH 122	Differential Equation & Dynamic	2	1	-	3	
	CHM 121	General Chemistry 11	2	1	-	3	
	CHM 112	General Chemistry	2	-	-	2	
	CHM 123	Organic Chemistry	1	1	-	2	
	PHY 100	Practical Physics	1	1	-	2	
	PHY 121	Electromagnetism	1	1	-	2	
	PHY 122	Modern Physics	2	-	-	2	
	PHY 123	Vibrations, Waves and Optics	2	-	-	2	
	GST 121	Use of Library, Study Skills and ICT	2	-	-	2	
	GST 122	Communication in English II					
	GST 123	Communication in French					
	IUITS	Igbinedion University industrial T					
		Total Credit Units				**21**	

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200 LEVEL COURSE STRUCTURE:

1ST SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNITS
			L	T	P	
	EMA 201	Engineering Mathematics 1	2	1	-	3
	ECP 201	Computer and Computing	2	1	-	1
	ENS 211	Engineering in Society	1	1	-	1
	CVE 211	Strength of Materials	1	1	-	2
	EEE 211	Electrical Engineering 1	2	1	-	2
	MEE 211	Engineering mechanics 1	1	1	-	2
	MEE 221	Engineering Drawings 1	1	1	3	2
	MEE 251	Thermodynamics 1	1	1	-	2
	MEE 271	Manufacturing Technology	1	1	-	2
	ELA 201	Engineering laboratory/Workshop Practice 1	-	-	6	2
	GST 211	History of Science and Philosophy	2	-		2
	ESP 223	Introduction to Entrepreneurial Skills II	2	1		2
		Total Credit Units				**24**

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200 LEVEL COURSE STRUCTURE:

2nd SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNITS
			L	T	P	
	EMA 202	Engineering Mathematics 1I	2	1	-	3
	ECP 204	IT in Engineering	2	1	-	1
	CVE 212	Strength of Materials	1	1	-	1
	CVE 222	Element of Architecture	1	1	-	2
	CVE 206	Fluid Mechanics 1	2	1	-	2
	EEE 212	Electrical Engineering II	1	1	-	2
	MEE 212	Engineering Mechanics II	1	1	3	2
	MEE 242	Material Science	1	1	-	2
	ELA 202	Engineering laboratory/Workshop Practice II	1	1	-	2
	GST 222	Peace Studies and Conflict Resolution	-	-	6	2
	IUITS 202	URG University Industrial Training Scheme	2	-		2
		Total Credit Units				**23**
		Grand Total Credit Units				**47**

300 LEVEL COURSE STRUCTURE:

1ST SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNITS
			L	T	P	
	EMA 301	Engineering Mathematics II	2	1	-	3
	GRE 331	Research methods and Technical Report Writing	2	1	-	2
	CVE 311	Theory of Structures	2	1	-	3
	CVE 321	Civil Engineering Hydrology I	2	1	-	2
	CVE 361	Fluid Mechanics II	2	1	-	2
	CVE 331	Building Technology	2	1	-	3
	CVE 351	Soil Mechanics	2	1	3	2
	CVE 341	Engineering Geology I	2	1	-	2
	ELA 301	Engineering laboratory/Workshop Practice III	-	-	6	3
	ESP 311	Foundation Course in Entrepreneurial Studies	2	-	1	2
		Total Credit Units				**24**

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300 LEVEL COURSE STRUCTURE:

2ND SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNITS
			L	T	P	
	EMA 302	Engineering Mathematics IV	2	1	-	3
	CVE 362	Fluid Mechanics II	2	1	-	2
	CVE 312	Civil Engineering Materials	2	1	-	3
	CVE 322	Structural Mechanics I	2	1	-	3
	CVE 332	Design of Structures I	2	1	1	3
	CVE 342	Engineering Geology II	2	1	-	2
	CVE 372	Engineering Survey and Geo-Informatics	2	1	1	3
	ELA 302	Engineering laboratory/Workshop Practice IV	-	-	6	3
	IUITS 302	URG Industrial Training Scheme III	-	-	6	1
		Total Credit Units				**23**
		Grand Total Units Credits				**47**

400 LEVEL COURSE STRUCTURE:

1ST SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNITS
			L	T	P	
	EMA 401	Engineering Mathematics V	2	1	-	3
	GRE 431	Technical Communication	2	1	-	2
	CVE 411	Structural Mechanics III	2	-	-	2
	CVE 421	Hydraulics III	2	1	-	2
	CVE 431	Design of Structures	2	1	-	3
	CVE 441	Soil Mechanics/Foundation Engineering I	2	1	-	3
	CVE 451	Highway & Transportation Engineering I	2	1	-	3
	CVE 461	Engineering Survey and Geo-Informatics	2	1	1	2
	CVE 471	Civil Engineering Practice and Law	2	-	-	3

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	CVE 481	Public Health Engineering I	2	-	-	2
	ELA 401	Engineering laboratory/Workshop Practice V	-	-	-	3
	ESP 411	Introduction to Entrepreneurial Studies	2	-	-	2
		Total Credit Units				**28**
2ND		**SECOND SEMESTER**				
	IUITS 402	URG Industrial Training Scheme IV				**6**
		Grand Total Credit Units				**34**

500 LEVEL COURSE STRUCTURE:

1ST SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNITS
			L	T	P	
	GRE 501	Engineering Management and Economics	2	1	-	3
	CVE 511	Structural Mechanics III	2	1	-	2
	CVE 521	Hydraulics Structures	2	1	-	2
	CVE 531	Design of Structures III	2	1	-	2
	CVE 541	Geotechnical (Foundation) Engineering	2	1	-	2
	CVE 551	Highway & Transportation Engineering I	2	1	-	2
	CVE 561	Water Resources & Environmental Engineering I	2	1	-	2
	CVE 591	Computer Appreciation in Civil Engineering	2	1	1	2
	CVE 501	Final Year Engineering Project	2	1	-	2
			2		-	
		OPTIONAL COURSES*	-		-	
	CVE 563	Advance Water Resources and Environmental Engineering II	2	1	-	2
	CVE 571	Highway & Transportation Engineering I	2			2
	CVE 581	Advance Structural Engineering II	2	1	-	2
	CVE 543	Advance Foundation(Geotechnical)Engineering1	2	1	-	2

	CVE 565	Drainage and Irrigation Engineering	2	1	-	2
	CVE 573	Construction Engineering	2	1	-	2
		Total Credit Units				**22**

Note: only one of the optional courses can be taken.

500 LEVEL COURSE STRUCTURE:

1ST SEMESTER	COURSE CODE	COURSE TITLE	SPREAD			CREDIT UNITS
			L	T	P	
	GRE 502	Engineering Management and Economics II	2	1	-	3
	CVE 512	Structural Mechanics IV	2	1	-	2
	CVE 522	Engineering Hydraulics	2	1	-	2
	CVE 532	Design of Structures III	2	1	-	2
	CVE 542	Geotechnical (Foundation) Engineering	2	1	-	2
	CVE 552	Highway & Transportation Engineering I	2	1	-	2
	CVE 562	Water waste Engineering I	2	1	-	2
	CVE 502	Final Year Engineering Project	2	1	-	3
			2		-	
		OPTIONAL COURSES*	-		-	
	CVE 564	Advance Water Resources and Environmental Engineering II	2	1	-	2
	CVE 572	Highway & Transportation Engineering II	2			2
	CVE 582	Advance Structural Engineering II	2	1	-	2
	CVE 542	Advance Foundation(Geotechnical)Engineering1	2	1	-	2
	CVE 566	Drainage and Irrigation Engineering	2	1	-	2
	CVE 574	Construction Engineering	2	1	-	2
		Total Credit Units				**20**
		Grand Total Credit Units				

Note: only one of the optional courses can be taken.