KONGU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

ERODE – 638 107

B.Sc (Mathematics)

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2021-2022

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)
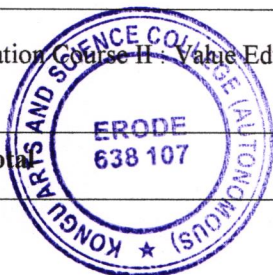## ERODE –638 107
DEPARTMENT OF MATHEMATICS
SCHEME OF EXAMINATION – CBCS PATTERN
(For the candidates admitted during the academic year 2021 – 2022 and onwards)

Part	Course Code	Course	Hrs/Week	T /P	Exam Duration	CIA	ESE	Total Marks	Credits
I SEMESTER									
I	21T01/21H01/ 21M01/21F01/ 21S01	Language – I	6	T	3	50	50	100	4
II	21E01	English – I	6	T	3	50	50	100	4
III	21UANCT101	Core I – Professional English - I	4	T	3	50	50	100	4
III	21UANCT102	Core II: Classical Algebra	4	T	3	50	50	100	4
III	21UANCP103	Core Practical I: MATH Software : GeoGebra	2	P	3	25	25	50	2
III	21UANAT104	Allied I: Physics –I	4	T	3	30	45	75	3
III	21UANAP205	Allied Practical I : Physics Practical	2	P	-	-	-	-	-
IV	21ES01	Foundation Course I : Environmental Studies#	2	T	3	-	50	50	2
		Total	30					575	23
II SEMESTER									
I	21T02/21H02/ 21M02/21F02/ 21S02	Language – II	6	T	3	50	50	100	4
II	21E02	English – II	6	T	3	50	50	100	4
III	21UANCT201	Core III: Professional English - II	3	T	3	50	50	100	4
III	21UANCT202	Core IV : Calculus	4	T	3	50	50	100	4
III	21UANCT203	Core V : Analytical Geometry	3	T	3	30	45	75	3
III	21UANAT204	Allied II: Physics –II	4	T	3	30	45	75	3
III	21UANAP205	Allied Practical II: Physics Practical	2	P	3	25	25	50	2
IV	21VE01	Foundation Course II : Value Education #	2	T	3	-	50	50	2
		Total	30					650	26

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Part	Course Code	Course	Hrs/Week	T/P	Exam Duration	CIA	ESE	Total Marks	Credits
III SEMESTER									
I	21T03/21H03/ 21M03/21F03/ 21S03	Language – III	6	T	3	50	50	100	4
II	21E03	English – III	6	T	3	50	50	100	4
III	21UANCT301	Core VI- Differential Equations and Laplace Transforms	4	T	3	50	50	100	4
III	21UANCT302	Core VII- Trignometry, Vector Calculus and Fourier Series	4	T	3	30	45	75	3
III	21UANAT303	Allied III: Statistics for Mathematics -I	5	T	3	50	50	100	4
IV	21UANSP304	Skill Based Practical I: Statistical Programming Language R	3	P	3	30	45	75	3
IV	21BT01/ 21AT01/ 21UANNT305	Basic Tamil @ / Advanced Tamil# (OR) Non Major Elective I *	2	T	3	-	75	75	2
IV	21SS01	Gender Studies	SS*			-	50	50	2
		Total	**30**					**675**	**26**
IV SEMESTER									
I	21T04/21H04/ 21M04/21F04/ 21S04	Language – IV	6	T	3	50	50	100	4
II	21E04	English – IV	6	T	3	50	50	100	4
III	21UANCT401	Core VIII- Mechanics	4	T	3	50	50	100	4
III	21UANCT402	Core IX- Discrete Mathematics	4	T	3	50	50	100	4
III	21UANAT403	Allied IV – Statistics for Mathematics -II	5	T	3	50	50	100	4
IV	21UANSP404	Skill Based Practical II: Statistical Analysis using SPSS	3	P	3	30	45	75	3
IV	21BT02/ 21AT02/ 21UANNT405	Basic Tamil @ /Advanced Tamil # (OR) Non Major Elective II *	2	T	3	-	75	75	2
IV	21SS02	Fundamentals of Yoga	SS*			-	50	50	2
		Total	**30**					**700**	**27**
V SEMESTER									
III	21UANCT501	Core X - Real Analysis-I	6	T	3	50	50	100	4
III	21UANCT502	Core XI - Complex Analysis-I	6	T	3	50	50	100	4
III	21UANCT503	Core XII- Abstract Algebra	6	T	3	50	50	100	4
III	21UANCT504	Core XIII - Operations Research	5	T	3	50	50	100	4
III	21UANET505/ 21UANET506/ 21UANET507	Elective I / MOOC courses	4	T	3	50	50	100	4
III	21UANSP508	Skill Based Practical III: MATLAB Programming	3	P	3	30	45	75	3
V	21UANIT01	Institutional Training							

		Total	30					575	23
		VI SEMESTER							
III	21UANCT601	Core XIV: Real Analysis-II	6	T	3	50	50	100	4
III	21UANCT602	Core XV : Complex Analysis-II	6	T	3	50	50	100	4
III	21UANCT603	Core XVI : Linear Algebra	6	T	3	50	50	100	4
III	21UANEP604/ 21UANEP605/ 21UANEP606	Elective II	4	P	3	50	50	100	3
III	21UANET607/ 21UANET608/ 21UANET609	Elective III	6	T	3	50	50	100	4
IV	21UANSV610	Skill Based - IV: Project**	2	-	-	30	45	75	3
V	21NS01/21NC01/ 21YR01/21RR01/ 21EC01/21ET01/ 21SC01/21PE01	Extension Activities (NSS/NCC/YRC/RRC/ECO Club/Ethics Club/Science Forum/Physical Education)	-	-	-	50	-	50	1
		Total	30					625	23
		Total						3800	148

SS* – Self Study Course

@ Only Continuous Internal Assessment (CIA).

Only End Semester Examination through Online (ESE).

$ Students have to go for teaching practice as an Institutional Training for 15 days and the training report has to be submitted. Completion of training is mandatory to get a degree.

* Courses offered to other Departments, only End Semester Examinations (ESE).

** GUIDELINES FOR PROJECT WORK

- Students are divided into groups.
- A supervisor has been allotted to each group by the Department.
- The group can select the broad field and the topic of the project by discussing with the supervisor.
- Each group should maintain a work diary wherein weekly work carried out has to be written which will be reviewed by the supervisor.
- A minimum of three reviews have to be done,
  - ➢ In the first review, the group has to submit the basic materials which are needed for the project.
  - ➢ During the second review, the progress of the project will be monitored.
  - ➢ In the final review, the group has to submit the rough copy of the project.
- They should be asked to present the work done to the respective supervisor during the reviews.
- The group should submit a rough copy of the project to their supervisor before the final copy.
- The work diary along with the project report should be submitted at the time of Viva-Voce Examination.

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CIA Marks Distribution:

The supervisor will give the marks for CIA as per the norms stated below:

First Review	05 Marks
Second Review	10 Marks
Final Review	10 Marks
Attendance	05 Marks
Total	30 Marks

End Semester Examination:

The evaluation for the End Semester Examination should be as per the norms given below:

Project Report	30 Marks
Viva-Voce Examination	15 Marks (Jointly evaluated by Internal and External Examiners)
Total	45 Marks

LIST OF ALLIED COURSES

	Course Code	Course Name
Allied-I	21UANAT104	Allied Physics –I
Allied-II	21UANAT204	Allied Physics –II
Allied-III	21UANAT303	Statistics for Mathematics - I
Allied-IV	21UANAT403	Statistics for Mathematics -II

LIST OF NON MAJOR ELECTIVE COURSES

	Course Code	Course Name
NME-I	21UANNT305	Decision Making Techniques
NME-II	21UANNT405	Statistical Methods

LIST OF SKILL BASED COURSES

	Course Code	Course Name
Skill Based-I	21UANSP304	Statistical Programming Language R
Skill Based-II	21UANSP404	Statistical Analysis using SPSS
Skill Based-III	21UANSP508	MATLAB Programming
Skill Based-IV	21UANSV607	Project

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LIST OF ELECTIVE COURSES			
	Course Code		**Course Name**
Elective - I	21UANET505	A	Programming in C
	21UANET506	B	Scientific Computing with SageMath
	21UANET507	C	Visual Basic
Elective - II	21UANEP604	A	Programming in C Practical
	21UANEP605	B	Scientific Computing with SageMath Practical
	21UANEP606	C	Visual Basic Practical
Elective - III	21UANEP607	A	Numerical Methods
	21UANET608	B	Elementary Graph Theory
	21UANET609	C	Fuzzy Sets and Fuzzy Logic

LIST OF EXTRA CREDIT COURSES			
Advance Learners Course -I	21UANAL406	A	Vedic Mathematics
	21UANAL407	B	Financial Mathematics
Advance Learners Course -II	21UANAL509	A	Mathematics for Competitive Examinations
	21UANAL510	B	Simulation
NCC	21UNC01	A	2 Credits will be awarded for B Certificate
	21UNC02	B	2 Additional Credits will be awarded for appearing C Certificate Examination

Advanced Learner course is offered to the UG students who have no standing arrears and secured 7.5 and above CGPA upto previous Semester in Part – III only.
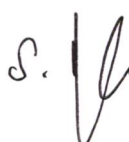
➢ The students can choose any one of the above mentioned courses.

➢ Only **External** Assessment for **100 Marks.**

➢ **2 Credits** allotted for ALC.

➢ This course is purely a **Self Study Course** and will not be considered for computation of Cumulative Grade Point Average (CGPA).

➢ If a student failed or not opted ALC paper in the Fourth Semester, he may not be able to opt the ALC paper in the Fifth Semester.

<u>**For NCC Cadets**</u>

• 2 extra credits are allotted to the NCC Cadet who are awarded 'B' certificate by the Direct General (DG), NCC Office.

• 2 additional extra credits are allotted to the NCC Cadet who have appeared for 'C' Certificate examination which is conducted by the Direct General (DG), NCC Office.

Total Marks: 3800
Total Credit: 148

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Dr.S.Nagarajan
Chairman
Board of Studies-Mathematics

Sem	Course Code	Core I PROFESSIONAL ENGLISH - I	Total Marks: 100		Hours Per Week	Credits
I	21UANCT101		CIA: 50	ESE: 50	4	4

Course Objectives:

1. To develop the language skills of students.

2. To enhance the lexical, grammatical, socio-linguistic and communicative competence.

3. To focus on developing students' knowledge in domain specific registers and the required language skills.

Course Outcomes (CO): On completion of the course, students should be able to

CO 1	Identify the correct usage of vocabulary and grammar in speaking and writing.	K1 - K4
CO 2	Apply the language for speaking efficiently and confidently.	K1 - K4
CO 3	Build the reading skill by using unfamiliar texts with comprehension.	K1 - K4
CO 4	Demonstrate the language skills through academic writing.	K1 - K4
CO 5	Develop the leadership quality and team building through linguistic competence.	K1 - K4

K1: Remember; K2: Understand; K3: Apply; K4; Analyze; K5: Evaluate; K6: Create.

Unit - I	Communication

Listening: Listening to audio text and answering questions - Listening to Instructions.

Speaking: Pair work and small group work.

Reading: Comprehension passages - Differentiate between facts and opinion.

Writing: Developing a story with pictures.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

Unit - II	Description

Listening: Listening to process description - Drawing a flow chart.

Speaking: Role play (formal context).

Reading: Skimming/Scanning - Reading passages on products, equipment and gadgets.
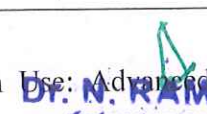
Writing: Process Description - Compare and Contrast Paragraph - Sentence Definition and Extended definition - Free Writing.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

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Unit - III	Negotiation Strategies

Listening: Listening to interviews of specialists / Inventors in fields (Subject Specific).

Speaking: Brainstorming (Mind Mapping) - Small group discussions (Subject Specific).

Reading: Longer Reading text.

Writing: Essay Writing (250 words).

Vocabulary: Register specific - Incorporated into the LSRW tasks.

Unit - IV	Presentation Skills

Listening: Listening to lectures.

Speaking: Short talks.

Reading: Reading Comprehension passages.

Writing: Writing Recommendations - Interpreting Visuals inputs.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

Unit - V	Critical Thinking Skills

Listening: Listening comprehension - Listening for information.

Speaking: Making presentations (with PPT-practice).

Reading: Comprehension passages - Note making. (Comprehension: Motivational article on Professional Competence, Professional Ethics and Life Skills).

Writing: Problem and Solution essay - Creative writing - Summary writing.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

SKILL DEVELOPMENT ACTIVITIES

1.	Listening and Answering
2.	Speaking Activities through Role Play
3.	Reading and Answering
4.	Resume Preparation
5.	Vocabulary Enhancement Activities – Definitions, Synonyms, Antonyms, Keywords etc.

TEXT BOOK

1.	Professional English for Physical Sciences-I - TANSCHE.

REFERENCE BOOKS

1.	Simon Sweeney, English for Business Communication, Student's Book, Second Edition, Cambridge University Press, 2003.
2.	Michael McCarthy, Felicity O'Dell, English Vocabulary in Use: Advanced, First South Asian Edition, Cambridge University Press, 2003.

WEB RESOURCES	
1.	https://nptel.ac.in/courses/109/104/109104030/
2.	https://www.edubull.com/courses/online-english-speaking-courses-video-english/tofel-ilets/basic-courses/professional-english-part-2

Course Designed By	Verified By	Approved By HOD
Mr. S.MURUGANANTHAM	Ms.C.RADHAMANI	Dr.S.NAGARAJAN

QUESTION PAPER PATTERN

SECTION - A (10 X 1 = 10 Marks)	SECTION - B (4 X 10 = 40 Marks)
(Vocabulary) (MCQ, Info-gap questions - domain specific vocabulary)	(Reading: Two long domain-specific comprehension passages with questions pertaining to understanding and analysis - 20 Marks) (Writing: Descriptive/narrative/persuasive writing questions pertaining to domain-specific vocabulary - 20 Marks)

Mapping of COs with POs and PSOs

PO/PSO CO	PO							PSO				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	S	S	S	M	M	S	M	M	S	S
CO 2	S	S	S	S	S	M	M	S	S	M	S	M
CO 3	S	S	M	M	M	M	S	S	S	M	S	M
CO 4	S	S	M	M	M	M	M	S	S	M	S	M
CO 5	S	S	S	S	M	S	S	S	S	S	S	S

S-Strong, M-Medium, L-Low

Sem	Course Code	Core III PROFESSIONAL ENGLISH - II	Total Marks: 100		Hours Per Week	Credits
II	21UANCT201		CIA: 50	ESE: 50	4	4

Course Objectives:

1. To develop their competence in the use of English with particular reference to the workplace situation.

2. To enhance the creativity of the students which will enable them to think of innovative ways to solve issues in the workplace.

3. To develop their competence and competitiveness and thereby improve their employability skills.

Course Outcomes (CO): On completion of the course, students should be able to		
CO 1	Identify the importance of linguistic competence in workplace situations	K1 - K4
CO 2	Develop LSRW skills for academic and career purposes	K1 - K4
CO 3	Build the employability skills through various speaking and writing tasks	K1 - K4
CO 4	Relate the communication skills suitable for employability	K1 - K4
CO 5	Illustrate the digital competence with innovation and imagination	K1 - K4

K1: Remember; K2: Understand; K3: Apply; K4; Analyze; K5: Evaluate; K6: Create.

Unit - I	**Communicative Competence**

Listening: Listening to two talks/lectures by specialists on selected subject specific topics - (TED Talks) and answering comprehension exercises (inferential questions).

Speaking: Small group discussions (the discussions could be based on the listening and reading passages - open ended questions).

Reading: Two subject-based reading texts followed by comprehension activities/exercises.

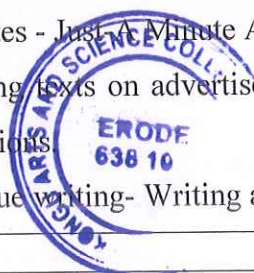Writing: Summary writing based on the reading passages.

Unit - II	**Persuasive Communication**

Listening: Listening to a product launch- sensitizing learners to the nuances of persuasive communication.

Speaking: Debates - Just A Minute Activities

Reading: Reading texts on advertisements (on products relevant to the subject areas) and answering inferential questions.

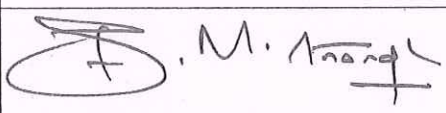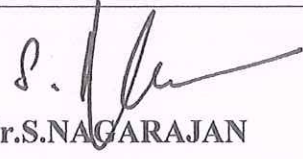Writing: Dialogue writing- Writing an argumentative / persuasive essay.

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Unit - III	Digital Competence

Listening: Listening to interviews (subject related).

Speaking: Interviews with subject specialists (using video conferencing skills) - Creating Vlogs (How to become a vlogger and use vlogging to nurture interests – subject related).

Reading: Selected sample of Web Page (subject area).

Writing: Creating Web Pages.

Reading Comprehension: Essay on Digital Competence for Academic and Professional Life.

The essay will address all aspects of digital competence in relation to MS Office and how they can be utilized in relation to work in the subject area.

Unit - IV	Creativity and Imagination

Listening: Listening to short (2 to 5 minutes) academic videos (prepared by EMRC/ other MOOC videos on Indian academic sites - E.g. https://www.youtube.com/watch?v=tpvicScuDy0).

Speaking: Making oral presentations through short films - subject based.

Reading: Essay on Creativity and Imagination (subject based).

Writing - Basic Script Writing for short films (subject based) - Creating blogs, flyers and brochures (subject based) - Poster making - writing slogans/captions (subject based).

Unit - V	Workplace Communication and Basics of Academic Writing

Speaking: Short academic presentation using PowerPoint.

Reading & Writing: Product Profiles, Circulars, Minutes of Meeting.

Writing an introduction, Paraphrasing, Punctuation (period, question mark, exclamation point, comma, semicolon, colon, dash, hyphen, parentheses, brackets, braces, apostrophe, quotation marks, and ellipsis), Capitalization (use of upper case).

SKILL DEVELOPMENT ACTIVITIES

1.	Group Discussion
2.	Persuasive Speaking - Conversation
3.	Listening Activities – Watching Videos and answering questions and summarizing the content
4.	Creative Writing – Flyers, Brochures, Slogans, Captions
5.	PowerPoint Presentation

TEXT BOOK

1.	Professional English for Physical Sciences-II - TANSCHE.

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	REFERENCE BOOKS
1.	Alice Oshima & Ann Hogue, Writing Academic English, Second Edition, Addison Wesley Publishing Company, 1991.
2.	Lyn R. Clark, Kenneth Zimmer, Joseph Tinervia, Business English and Communication, Seventh Edition, MacMillan / McGraw-Hill, Imprint 1991.
	WEB RESOURCES
1.	https://www.coursera.org/learn/speak-english-professionally
2.	https://www.ted.com/talks/pranav_rajan_computer_science_education

Course Designed By	Verified By	Approved By HOD
Mr. S.MURUGANANTHAM	Ms.C.RADHAMANI	Dr.S.NAGARAJAN

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