# GLS UNIVERSITY
# Bachelor of Computer Applications (BCA)
# (Core Course)
# Semester-IV
# 0301402 INTRODUCTION TO XML

## 1. Course Objective:

- To acquaint the students with structure of XML.
- To provide knowledge on validating data in XML.
- To acquire knowledge of functional programming based on XSLT.
- To understand how to transform XML format into other format.

## 2. Course Duration:

The course will have sessions which are divided into five modules. Each module consists of nine sessions of 60 minutes each and carries a weightage of 20%.

## 3. Course Contents:

| Module No. | Modules/Sub-Modules | No. of Sessions | Weightage |
|---|---|---|---|
| I | **Introduction to XML**<br>• Need of XML<br>• XML Terminology<br>• XML Standards<br>• Basic Structure- A simple XML Document<br>• The Idea of Markup<br>• Organizing Information in XML<br>• Creating Well-formed XML Documents<br>• XML Declaration<br>• XML Naming rules<br>• Element Tag- Rules<br>• Element Attributes- Rules<br>• Element Content<br>  o PCDATA<br>  o CDATA<br>• Comments<br>• Well-formed versus Valid<br>• HTML versus XML | 09 | 20% |
| II | **Document Type Definition (DTD)**<br>• Introduction to DTD<br>• Why do we need DTDs?<br>• Types of DTD<br>  o External<br>  o Internal<br>• Inserting Comments in a DTD<br>• Element Type Declaration<br>  o Declaring Elements | 09 | 20% |

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| | ○ Elements Content Models<br>▪ Sequence, Occurrences, Choice<br>▪ Empty , Any , Mixed<br>• Attribute Declaration<br>○ Declaring Attributes<br>○ Default for Attributes<br>○ Attribute Types<br>• Conditional Sections<br>• Limitations of DTD | | |
| III | **XML Namespace**<br>• Need for XML Namespace<br>• Namespaces-The Big Idea<br>• Declaring Namespaces<br>• Namespace Scoping<br>• Default Namespaces<br>• Documents with Multiple Namespaces<br>• Elements with No Namespace<br>• Attributes and Namespaces<br>• Namespace Processing<br>• Use of Namespace- Example<br>• Problems with Namespaces | 09 | 20% |
| IV | **XML Schema**<br>• Introduction to Schema<br>• Features<br>• DTD versus XML Schema<br>• XML Schema Type System<br>○ Simple types<br>○ Complex Types<br>• Grouping of Data<br>• Deriving Types<br>• Attributes | 09 | 20% |
| V | **Extensible StyleSheet Language (XSL)**<br>• Need of XSL<br>• XSL:Three Parts<br>• Computing with xml/xsl<br>○ Elementary Operations<br>○ Using variables<br>• XSLT Language Characteristics<br>• XSLT Features<br>• XSL Transformation (XSLT)<br>○ Templates<br>○ Creating Elements and Attributes<br>• XML-to -HTML Transformation Example<br>• Looping<br>• Conditional Processing<br>• Numbers and Sorting | 09 | 20% |

## 4. Teaching Methods:

The following pedagogical tools will be used to teach this course:

1. Lectures and Discussions
2. E-learning
3. Assignments

## 5. Evaluation:

The students will be evaluated on a continuous basis and broadly follow the scheme given below:

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|---|---|---|
| 1. | Assignments / Presentations/ Quizzes | 30% (Internal Assessment) |
| 2. | Internal Examination | 20%(Internal Assessment) |
| 3. | External Examination | 50% (External Assessment) |

## 6. Basic Text Books:

| Sr. No | Author/s | Name of the book | Publisher | Edition |
|---|---|---|---|---|
| T1 | Atul Kahate | XML & Related Technologies | Pearson | 2009 |
| T2 | IBM | XML Related Technologies and Programming with Java | PHI | 2004 |

## 7. Reference Books:

| Sr. No | Author/s | Name of the book | Publisher | Edition |
|---|---|---|---|---|
| R1 | Fabio Arciniegas | XML Developer's Guide | Tata McGraw Hill | Latest |

## 8. List of Journals / Periodicals / Magazines / Newspapers etc.:

| Sr. No | Link |
|---|---|
| 1 | http://nptel.ac.in/courses/106106093/39 |
| 2 | http://nptel.ac.in/courses/106106093/40 |
| 3 | http://nptel.ac.in/courses/106106093/41 |
| 4 | http://www.nptelvideos.com/video.php?id=723 |
| 5 | https://www.mooc-list.com/course/introducci%C3%B3n-xml-unimooc?static=true |
| 6 | https://www.youtube.com/watch?v=-oLlHA0Uy-s |
| 7 | https://www.youtube.com/watch?v=itRkLa2kq6w. |
| 8 | https://www.youtube.com/watch?v=hVu9ztO4qvs |
| 9 | https://www.youtube.com/watch?v=nyk8QO08grM |

## 9. Session Plan:

| Session No. | Topics/Chapters |
|---|---|
| 1-4 | XML ,XML Terminology, XML Standards, Basic Structure- A simple XML Document, The Idea of Markup, Organising Information in XML, Creating Well- |

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|---|---|
| | formed XML Documents |
| 5-9 | XML Declaration, XML Naming rules, Element Tag- Rules, Element Attributes-Rules, Element Content, Comments, Well-formed versus Valid,<br>HTML versus XML |
| 10-14 | Introduction to DTD, Types of DTD, Comments Element Type Declaration |
| 15-18 | Attribute Declaration, Conditional Sections, Limitations of DTD |
| 19-24 | Namespaces-The Big Idea , XML Namespaces , Qualified Names (QNames), Declaring Namespaces, Namespace Scoping, Default Namespaces |
| 25-27 | Documents with Multiple Namespaces , Elements with No Namespace, Attributes and Namespaces , Namespace Processing, Use of Namespace- Example, Problems with Namespaces |
| 28-31 | Introduction to Schema, Features, DTD versus XML Schema, XML Schema Type System |
| 32-36 | Grouping of Data, Deriving Types, Attributes |
| 37-40 | Need of XSL, XSL: Three Parts , XSLT Language Characteristics, XSLT Features, XSL Transformation (XSLT) |
| 41-45 | XML-to -HTML Transformation Example , Looping , Conditional Processing, Numbers and Sorting |

## 10. Learning Outcome:

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

- Define elements and attributes and describe the structure of XML document
- Create well-formed and valid XML documents.
- Validate the data using DTD and Schemas.
- Plan and implement XML based applications, and to apply functional programming in document conversion.