

**UNIVERSITY OF EDUCATION, WINNEBA-KUMASI**  
**FACULTY OF TECHNOLOGY EDUCATION**  
**DEPARTMENT OF EDUCATION OF TECHNOLOGY**

**COURSE OUTLINES**

**COURSE TITLE:           WOODWORK MATERIALS**  
**COURSE CODE:         DTE 114**  
**CREDITS                 2**  
**LEVEL                   100**  
**SEMESTER:             ONE**  
**COURSE LECTURER:   STEPHEN JOBSON MITCHUAL**

**COURSE OBJECTIVE**

Solid woods Veneer and plywood's are no longer the only material used in woodworking. Plastics, metals, glass. Ceramics, leather etc are all currently included as industrial materials for wood works. This course is designed to create an in-depth understanding of physical and working properties of wood and wood related material as well as the way these properties influence selection and usage. This awareness is of prime importance to the designer (students) in this ability to identify and select the right types of material for project in woodworks.

**AREAS OF COVERAGE**

- i. Forest and Forest Trees
- ii. Hardwood and softwood
- iii. Gross features of wood
- iv. Identification of some commercial tropical timbers, their physical; and strength properties
- v. Moisture in wood
- vi. Density of wood and it\s practical significance
- vii. Seasoning and preservation of wood
- viii. Defect in timber and its effect on wood utilization
- ix. Manufactured Boards
- x. Wood related materials(Plastics, Fasteners, Adhesives Glass and Ceramics etc
- xi. Wood Adhesives

## METHODOLOGY

This course is practical biased and will be taught through problem solving activities. A variety of methods shall therefore be used to teach the course.

These include:

- Lecture
- Demonstration
- Discussion
- Group presentation
- Educational visit
- Practical activities

## MODE OF ASSESSMENT

The assessment shall be in the form of end of semester examination and continuous assessment. The end of semester examination will attract 60% whilst the continuous assessment will constitute 40% of the total marks.

## REFERENCES

- Bolt W. (1996) **Basic engineering, educational and professional.** Publishing Ltd. London.
- Bruce, J.B. (1991) **Work shop processes practices and materials.** Edward Arnold Publishers.
- Clifton, R.H. (1971) **Principles of planned maintenance.**
- Desch, H.E. and J.M. Dinwoodie (1993) **Timber, Its structure properties and utilization** Macmillan Press Ltd.
- Fierer, J.L. and G.R. Hutchings (1986) **Carpentry and building construction** Macmillan Press Ltd.
- Kollmann, F.P. and W.A Cote, Jr (1967) **Principle of Wood Science and Technology.** Springer-Verlay Berlin Heidelberg. New York.
- Krar. S.F. and Oswald (1990) **Technology of Machine Tools.** MacGrawn Hill Inc.
- Okai R, Mitchual, S.J. and Frimpong-Mensah (2006) **Optimization techniques for minimizing saw teeth deflection and lumber thickness variation.** Journal of precision engineering. NY. USA Vol.30.pp 39-46
- Voisey, N.S. (1987) **Wood Machining. (A complete Guide to Effective and Safe Working Practices)** Stobart &Son Ltd. London.

**COURSE OUTLINE:**       **WOODWORK TOOLS AND PROCESSES**  
**COURSE CODE:**       **DTE 122**  
**CREDIT HOURS:**       **2**  
**LEVEL/;**               **100**  
**SEMESTER:**           **TWO**  
**COURSE LECTURER:**   **STEPHEN JOBSON MITCHUAL**

## **COURSE OBJECTIVE**

The use of hand tools to create wood product play vital role in woodworks. The understanding of the interaction between woodwork tools and the solid wood is also important. This course will introduce student to the safe and correct use as well as the application and maintenance of traditional and modern woodworking hand tools. The course will also cover woodwork joints. Students will complete a variety of hands on shop project using these tools and joints.

## **AREAS OF COVERAGE**

### **A woodwork hand tools**

#### **Holding and supporting tools**

Bench clamps, bench vices, bench stop, bench hooks miter boards etc

#### **Geometric tools**

Measuring tools, marking out tools, and setting out tools.

Cutting and Boring tools Saws, planes, chisels planes

Percussion and impelling tools

- Woodworking Joints
- Widening Joints and their construction
- Framing Joint and their construction
- Lengthening Joints
- Angle Joints

## **METHODOLOGY**

This course will be taught through practical problem solving activities. It should not be taught as an isolated theory.

- Lecture
- Discussion
- Demonstration
- Fieldstrips
- Brain storming

## **MODE OF ASSESSMENT**

The assessment shall be in the form of end of semester examination and continuous assessment. The end of semester examination will attract 60% whilst the continuous assessment will constitute 40% of the total marks.

### **REFERANCES:**

- Bates, D.R. (1982) Carpentry and joinery. Longman publications London
- David J. (1983) The craft of furniture making. B.T. Batford London.
- Fierer, J.L. (1999) Beginning Woodwork. Macmillan USA
- Jackson A. and D Day. (1991) Woodworkers Manual. Harper Collins. London
- Sackey, J.K.N. etal (1991) Woodwork for Senior Secondary Schools MOE Ghana
- Wagner, W.H. & C.E Kick lighter. (1991) Modern Wood working.  
The Goodheart-Willox Company Inc

<b>COURSE TITLE:</b>	<b>WOOD MACHINING</b>
<b>COURSE CODE:</b>	<b>DTE 234</b>
<b>CREDITS HOURS</b>	<b>2</b>
<b>LEVEL</b>	<b>200</b>
<b>SEMESTER</b>	<b>THREE</b>
<b>COURSE LECTURER</b>	<b>STEPHEN JOBSON MITCHUAL</b>

### **COURSE OBJECTIVE**

This course is designed to equip students with the knowledge and skills involve ion the use of Woodwork machines. The courses will also emphasis the need to observe workshop safety measures when using the machines.

### **AREAS OF COVERAGE**

- Circular saw
- Band saw
- Surface Planer
- Thicknesser
- Spindle moulder
- Wood lathe
- Mortise
- Portable machine tools

### **TEACHING METHOD**

This course is practical biased and will be taught through practical activites. A variety of teaching methods will be adopted These includes;

- Lecture
- Demonstration
- Group project work
- Group
- Presentation/discussion
- Industrial visit

## MODE OF ASSESSMENT

Both continuous assessment and end of semester examination will be used to evaluate /asses student's performance.

Continuous assessment - 40%

End of semester - 60%

Any student( or a group of students who fails to participate in or submit his/her project work will be given incomplete results Student are advised to submit their cutting list to the workshop assistants by the end of 5<sup>th</sup> week of the semester

## REFERENCES:

Bates D.R. (2003) **Carpentry and Joinery 1**. Singapore; Pearson Education.

Bates D.R. (2003) **Carpentry and Joinery 2**. Singapore; Pearson Education.

Fierer, J, L (1994) **Wood: Technology and Processes**. NY: Glencoe/McGrawn-Hill

Fierer, J, L (1988) **Cabinetmaking and Millwork**. California: McGrawn-Hill

Jackson et. Al (1997) **Wood worker's Manual**. London: Harper Collins.

Martensson A. (1995). **The woodworker's Bible**. London: A and C Black

## CURRICULUM VITAE

Name: Stephen Jobson Mitchual  
Nationality: Ghanaian  
Sex: Male  
Marital Status: Married  
Date of Birth: 30<sup>th</sup> December 1968  
Postal address: P.O. Box 1277, Kumasi  
Email address: [smitchual@yahoo.com](mailto:smitchual@yahoo.com)  
Telephone number: 024-4248327 / 020-5111915

### EDUCATIONAL BACKGROUND

INSTITUTION	COURSE	CERT	DATE
Kwame Nkrumah University of Science and Technology	Wood Technology & Management	M.Sc	June 2002
CCASSIG	ACCA	ACCA Level 1 & Part of Certificate Level	2001
University Cape Coast	Postgraduate Diploma in Education	Postgraduate Diploma in Education	1997- 1998
Kwame Nkrumah University of Science and Technology	Agricultural Engineering	B.Sc (HONS)	1989- 1993
Fijai Secondary School	Physics Chemistry Mathematics	School Certificate 'A' Level	1985 1987

## **JOB EXPERIENCE**

Five years lectureship at the University of Education, Winneba (Kumasi Campus)

### **Specific activities**

- Lecturing of Woodworks at Level 100, 200, and 300; 4year B.Ed. Technology Education.
- Lecturing of woodwork at level 300 and 400; 2year B.Ed Voctec Education.
- Supervising of student project work.
- Supervising of student on teaching practice.
- Eight year teaching experience with Ghana Education Service.
- Six months industrial attachment at Fabi Timber Ltd. 2000
- Six weeks industrial attachment at wiafe Brothers Furniture Ltd. 1999
- Six weeks industrial at Forest Inspection Department. 1999
- Six weeks vacation training on maintenance, repairs and operation of farm machinery at Kpong farms.1991
- Two year job experience with primary health care team, Central Region 1987-1989

## **PUBLICATION**

### **Journal and Articles**

Okai R, Mitchual S.J.K Frimpong-Mensah. (2006) Optimization techniques of saw teeth deflection and lumber thickness variation. Journal of precision engineering, Vol 30.pp 39-46

### **Conference and Seminar Paper**

Mitchual S.J. Okai R.K. Frimpong-Mensah (2007) Optimizing lumber production through improved accuracy of side clearance of band saw teeth and quality control measures 5<sup>th</sup> Inter-faculty seminar, College of technology Education, Kumasi.

Okai R Mitchual S.J.K Frimpong-Mensah (2001) Sawing accuracy of satellite-tipped and swage-set bandsaw blade when sawing a tropical hardwood at a Ghanaian sawmill. Proceedings of the 15<sup>th</sup> international wood machining seminar. Woo machining institute Berkeley C.A USA 229-238PP



## **Unpublished Books and Papers**

Mitchual S.J Banahene N.O, F. Donkor (unpublished) Relationship between teacher's self-efficacy and length of teaching experience for professional and non-professional teachers.

Wood work Technology I- TVET Distance learning manual (Submitted for publication)

Wood work Technology IV- TVET Distance learning manual (Submitted for publication)

## **Dissertations**

Performance of a bandsaw blade used in rip-sawing Wawa (Triplochiton scleroxylon) at a Ghanaian sawmills. (2002) Unpublished dissertation at Institute of Renewable Natural Resources, KNUST)

Performance of students in physics- A case study of Winneba and Achimota secondary school (1998) Unpublished dissertation at school of graduate studies UCC).

A survey of irrigation cost in Ghana. (1993) Unpublished dissertation at school of engineering, KNUST).

## **WORKSHOP ATTENDED**

Workshop on Open and Distance Learning administration for UEW TVET tutors and support staff. Organized by Department of Technology Education 16<sup>th</sup> -18<sup>th</sup> November 2007.

Workshop for teaching basic Wiki editing skills for teachers & educators Organized by Commonwealth of Learning at IEDE 26<sup>th</sup> February – 2<sup>nd</sup> March 2007

Workshop for teaching basic Wiki editing skills for teachers & educators Organized by Commonwealth of Learning at IEDE 22<sup>nd</sup> -26<sup>th</sup> January 2007.

One week workshop on editing of distance learning materials. Organized by Department of Technology Education December 2005.

One week workshop on international research management. Organized by the society of Research Administrators International at IEDE 14<sup>th</sup> – 18<sup>th</sup> March 2005.

One week workshop on teaching if distance learning education. Organized by IEDE, UEW-Winneba November 2004.

Four days ICT workshop on the designed of website and a multimedia with power point from 2<sup>nd</sup> -6<sup>th</sup> February

Three days entrepreneurship seminar organized by NBSSL. 15<sup>th</sup> -17<sup>th</sup> July 1993.

## **RESEARCH INTEREST**

The use of lesser used timber species (LUS) for structural development

- Wood machining
- Timber mechanics
- Issues in Technology Education

## **ON-GOING RESEARCH**

Poverty reduction in rural communities in Ghana through application of lesser used timber species (LUS) for development of structures.

Characterisation of durability properties of stem wood and branch of some tropical hardwood p Species.

Teacher's self-efficacy and length of service for professional and non-professional teachers.

The use of rubber tree planted in Ghana as a raw material for furniture production

## **SERVICE TO COMMUNITY**

- Patron, Brong Ahafo Student Union (BASU). UEW-Kumasi Campus. 2006 to date.
- Patron, Assemblies of God Campus Ministry UEW-Kumasi 2005 to date.
- Chairman of a committee to investigate an alleged copying of long essay to two students. 2006
- Chairman of a committee to vet document of first year student. 2006
- A member of a committee to evaluate the faculty of Technology Education 2006
- A member of Faculty of Technology Education, project proposal writing committee 2005 to date.
- Academic counselor tech 2a 2006-2007
- Academic counselor tech 2a 2005-2006
- Academic counselor Voctech 1 &11 2004-2005
- Coordinator woodworks units 2004-2007
- Chairman, committee of enquiry into an alleged financial malfeasance by GNATOC chairman, college of Technology of Education UEW. 2004.
- A member of a committee of enquiry into an alleged examination malpractice.2004

- Representative of Technology Education on Business Education Department Board 2003-2004
- Secretary to welfare association of the Technology Education Department. 2004

### **OTHER POSITION HELD**

- National president, Ghana National association of Teachers on Campuses 1999-2000.
- Secretary, staff welfare association, Winneba Secondary School 1996-1998
- Secretary, men's ministry, Assemblies of God church Winneba 1995-1998
- Financial secretary of Unity Hall KNUST, Kumasi 1992-1993.
- A member of the planning committee of Unity Hall KNUST, Silver Jubilee 1993
- Financial secretary of Agricultural Engineering students Association, KNUST 1991-1992.
- Organizing secretary, village evangelism wing of Inter Halls Christian Fellowship

### **REFREES**

Prof Steve Sobotie  
Principal  
College of Technology Education  
University of Education Winneba  
Kumasi Campus- Ghana

Prof Reynolds Okai  
Dean  
Faculty of Technology Education  
University of Education, Winneba  
Kumasi Campus-Ghana.

Mrs. Martha Danso  
Head of Department  
Department of Technology Education  
Faculty of Technology Education  
University of Education, Winneba  
Kumasi Campus - Ghana